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ABSTRACT

This document describes a study that investigated how the concept of education with production (EWP) can be understood in Zimbabwe and the capacity of conventional secondary schools in Zimbabwe to implement EWP. Chapter 1 of the document describes the concept of EWP as the application, in developing nations, of ideology in the school curriculum through school activities that produce goods and services. Implications of the concept for curriculum and school activities, a model for EWP, resources that are necessary, and the research objectives of the study are discussed. Chapter 2 explains the study's methodology, including the choice of participating schools and subjects, research instruments, reliability and validity issues, access to schools, and the data gathering. Chapter 3 presents the study's findings, based on interviews with three headmasters and eight teachers from these schools. Chapter 4 discusses those findings and covers such topics as how EWP is understood in Zimbabwe secondary schools and what procedures have been attempted; obstacles that were encountered in the attempts; and the implementation of EWP. The appendices contain the interview schedule used with headmasters; the interview schedule used with teachers; cards used during interviews with teachers; a checklist for commonly used materials; and a checklist for maintaining and servicing equipment. (CML)

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Education with production in conventional secondary schools: Understanding and implementation

Michael J. Mhlanga

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EDUCATION WITH PRODUCTION IN CONVENTIONAL SECONDARY SCHOOLS:
Understanding and Implementation

Michael J. Mhlanga

DISSERTATION
submitted as partial fulfilment for an
MA DEGREE IN WOODWORK EDUCATION

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This study is intended to elucidate how the concept of education with production (EWP) is understood and the capacity of conventional secondary schools to engage in productive activities. The study was carried out in three urban conventional secondary schools.

The findings indicate that no direct relationship exists between how the concept is understood and the tried activities. However, a similarity was found between the activities described by the respondents and those that the schools had tried.

The findings also indicate that certain common factors were perceived as a hindrance to the implementation of EWP. There was actually no evidence of conscious effort to implement EWP. The suggestions made to further the implementation in the schools are based on the pre-requisite that a need to engage in productive activities be identified in each case.

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FOREWORD

This Master of Arts dissertation was prepared within the framework of a bilateral cooperation project between Sweden and Zimbabwe. The Swedish International Development Authority - SIDA - provided financial support for the project.

Linköping University has been responsible for the education in cooperation with the University of Gothenburg. Fifteen students participated in the programme. Three students completed the main part of their education at University of Gothenburg. Twelve students completed their education at Linköping University.

For the twelve Linköping University students, the Department of Crafts and Design held the major responsibility for the courses. The exceptions being the course in research methodology and the actual preparation of the dissertations where the Department of Education and Psychology was responsible. Facilities for the fieldwork were provided by the University of Zimbabwe.

The Department of Crafts and Design has been the host department and responsible for the administration and coordination of the programme.

Linköping May 16, 1989

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INTRODUCTION AND RESEARCH QUESTION

In Zimbabwe education with production (EWP) is a policy which every school should respond to. Dr. Mutumbuka, in his capacity as minister for education, frequently stressed the need for schools to engage in productive activities.

Since the adoption of the concept in 1980, EWP has been interpreted into a curriculum in the Zimbabwe Foundation for Education with Production schools (ZIMFEP schools) of which there are eight in Zimbabwe, have some things in common. They were government initiated for the purpose of repatriating former refugees and combatants (Gustafsson, 1985). The schools are situated in semi-rural or rural surroundings, hence the dominance of agriculture as the main means of production. But other practical subjects like building, home economics, metalwork and woodwork are also taught and contribute to the productivity by making useful artifacts (Gustafsson, 1985). In order to facilitate meaningful interpretation and implementation of EWP, ZIMFEP schools have had the privilege of experimenting with their own curriculum development.

For the rest of the schools, however, EWP has no defined path to follow. Initiatives to facilitate productivity, as in ZIMFEP schools, have not been extended to these conventional schools. Conditions in conventional schools are different. Few have any land beyond that which is occupied by buildings and the much-needed sports fields. Therefore, agriculture cannot serve as a means of production. Other major differences between ZIMFEP and conventional schools are those concerning government or privately run schools, facilities, workshops, funding, curriculum organisation and expertise. ZIMFEP schools have been reported to be making headway in their bid to be productive, but successful EWP in other schools seems to have been very patchy. (Gustafsson, 1985)

Since ZIMFEP schools and other schools have little in common, it would be naive to assume that a general pattern of implementing EWP can prevail. In addition, EWP would not be understood in the same manner since it would need to be adjusted to suit different contexts. It can be argued, therefore, that some understanding of EWP coupled with experience in its contextualisation, have led to ZIMFEP and a few conventional schools enjoying a measure of success in its implementation. It can be argued further that there is also need for an understanding that elicits possibilities for the actual implementation so that conventional schools might be prompted to do EWP. EWP can mean different things in different circumstances. The present study, therefore, seeks to clarify the position of EWP in conventional secondary schools. Specifically:

1) How can education with production be understood? and

2) What is the capacity of conventional secondary schools to implement education with production?

1. EDUCATION WITH PRODUCTION AND ITS IMPLEMENTATION

As mentioned earlier EWP in ZIMFEP schools has mainly been production in agriculture. Further, other practical departments make a small contribution to the productivity by producing small but useful articles. In conventional secondary schools interpretation of the same concept would mean reconciling some of the institutional differences for example the absence of agriculture. Other differences are: the differences of local authorities and their loyalties; availability of facilities and workshops; variations in school and departmental funding; differences in curriculum organisation and availability of experienced teachers. Because of these variations EWP ought to be implemented differently in different schools.

In order to sort out the meaning of the EWP concept two complementary approaches will be used. The first approach will involve scrutinising how the concept of EWP has been interpreted in different situations. The second will analyse the two separate terms 'education' and 'production'.

1.1 Education with production - interpreting the concept

The available literature on EWP has revealed a certain pattern. Statements concerning EWP seem to fall into three categories representing different points of view or levels. From these three views education with production entails:

A ... *reducing the gulf between worker and peasant, and between mental and manual work.* (Price, 1979, p. 212)

B . . . *developing people through interaction between thought and manual work.* (Gustafsson, 1987, p.108)

C improving . . . *either the natural or the social environment* (Chung and Ngara, 1985, p. 107).

The A type of statement represents the rationale for doing EWP or the national ideology. The B type of statement is more about the interpretation of EWP into the curriculum. The C type of statement seems to describe what the implementation of EWP would entail in terms of school activities. It seems then that reference to EWP by different actors in its implementation seems to fall into what can be regarded as three levels. There is need to explain what the three levels would mean in the implementation process.

Ideology is decided at national level and serves national interests. The pupils, who constitute society's new generation, are exposed to this ideology at school. To make this possible, ideology must be translated into the school curriculum. And for the necessary learning to take place the curriculum is further simplified and translated into lessons and school activities by teachers. Through regular exposure to specially selected subject matter schools act as agents of change - change which is envisaged by the national ideology. Since it is the same concept that is being referred to at each of these three levels, these are by necessity interrelated. However, for the sake of elaborating the phenomenon a distinction between the three levels
will be made.

1.1.1 Education with production as an ideology

Under the present sub-heading EWP is referred to as an ideology because EWP reflects an ideology that Zimbabwe is committed to.

Thomas (1986, p. 229) assumes that the general pattern in every country is that their systems are *"...founded on a theory of human development"*. By theory of human development Thomas means a *"... set of beliefs about how people change over their life spans"* (p. 229). Change, in this context, means development and not mere replacement of one entity by another. It can be argued that EWP has something in common with human development theory: One of its roles is to initiate human development. Chung and Ngara, (1985) contend that EWP is development oriented. But how can EWP be instrumental to development?

By participating in productive work, the students are expected to gain attributes and skills that enable fuller participation in national development. These include; the eradication of class barriers, encouraging respect for labour, and development of the human mind for social, environmental and economic development (Price, 1979). To put it another way, EWP is valued for its vocational orientation and development of skills and attitudes that are contributory to self-reliance and or self-employment.

1.1.2 Education with production: Curriculum implications

There is a tendency among those involved with productive work or those aspiring to do so, to associate the more practical oriented subjects with EWP (Gustafsson, 1985). But EWP runs through every subject. In Zimbabwe, for example, EWP can be seen to take place when school subjects are *". . .brought to bear on solving the real problems faced by Zimbabweans"* (Chung and Ngara, 1985, p. 107). By integrating theory and practice a higher level of understanding can be achieved. As a result, better solutions for life's problems can be arrived at. There is a strong feeling, therefore, among proponents of productive work that practical subjects should have a strong technological and scientific base. (Price, 1979; Chung and Ngara, 1985)

True learning involves knowledge which is supported by practical application. This view has an association with teaching and learning. Dewey's theory of learning holds that the mind is built through the process of experiencing (Shane, 1983). Similarly, for EWP to be pedagogically beneficial, theory and practice should be integrated. Through his theory, Dewey's contribution to learning has had a tremendous impact on education.

1.1.3 Education with production: Implication for school activities

The problem of identifying school activities that are consistent with the concept of EWP has been mentioned earlier. The actors in the school situation (the headmasters, the teachers and pupils) face the dilemma of making appropriate choices of worthwhile activities. Besides providing learning experiences and practical skills, the activities should provide opportunities for group participation and problem solving. As revealed by the literature review, the problem of identifying such activities manifests itself in three ways. It can be argued that in order for learning to issue out of productive activities, consideration should be given to:

experiences derived from specific activities; immediate and subsequent application of knowledge and skills and the need to solve real life problems as opposed to simulated ones. Above all, consideration should be given to the fact that not all productive programmes are the same since they are implemented in different environments.

In order to facilitate deeper analysis, the notions of 'chance' and 'scheduled' activities need to be introduced. The former should be understood as referring to those tasks that are not planned. Their appearance is not anticipated. The latter should be understood as referring to pre-arranged or planned tasks.

In a school setting, some real-life problems do come by chance. Even though their appearance is not anticipated, they may have great educational value. If their appearance is frequent changes to scheduled activities will be equally frequent. The following citation illustrates this point quite clearly:

> *It is not pleasant to lie on the bare floor with nothing to lie on, so beds must be set up. Shirts are dirty, insects are nesting on the body, so washing of shirts is on the agenda. The school has received cloth, which means great rejoicing and a lot of work: it is necessary to sew and sew and sew. There is no firewood and the school is freezing - so it is necessary to drop everything and to mobilise forces in the search for firewood.*
> (Castles and Wiitstenberg, 1979, p. 197).

The school in question was certainly solving real life problems which are, in fact, chance activities. In conventional schools these sorts of chance occurrences would be difficult to accommodate. The carefully and accurately constructed schemes, timetables and lesson plans are designed to enable complete coverage of the prescribed subject content and little is left to chance. The urgency created by chance activities is unquestionable. On the other hand, the need to comply with work schedules is an equally strong force.

It should be appreciated that in order to reconcile the demands of imparting knowledge with those of accomplishing appropriate activities the need for institutional adjustments may arise. In ZIMFEP schools these adjustments have included time allocation, teacher expertise, selection and rejection of productive activities due to readiness of pupils or lack of funding (Gustafsson, 1987). The role of the institution to meaningfully interpret EWP should not, therefore, be underplayed. Demands on the personnel are likely to go beyond a mere duplication of ideas where different circumstances are neglected.

1.2 A different approach to interpret education with production

A different approach of outlining EWP is the one used by Gustafsson (1987) to shed light on the concept in question. His approach requires a brief analysis of the two terms 'education' and 'work' so as to extricate their various meanings. It is felt that in order to broaden the understanding of the concept EWP a similar approach should be used as an adjunct to the above.

1.2.1 Education

Peters (1966) warns against the practice, by philosophers from Socrates to More, of assuming that a definition of a term can encompass all its usages. Issuing out of this notion is the idea that education has usages that are either central or peripheral to its meaning. He argues that for this form of scrutiny to be of any significance it is important that one is conscious of the differences in the uses to which the term is put. However, he points out that two of the central usages of the term education relate to its outcomes and to the process of education.

In his lengthy exposition Peters (1966) argues that the normative and the cognitive aspects of the term education emphasise the valuation of educational outcomes. Hence normative aspects relate to questions of value, worth or commendation. But in order to ascertain what is valuable, or to determine what criteria to apply when valuating what is learnt lengthy and complex sociological or anthropological debate is inevitable. In an effort to sort out a similar issue, Simon (1973, p. 126) suggests that the history of education should encompass *". . .those influences which have a formative effect on the individual and social development of people".*

Peters (1966) is very clear in elucidating the cognitive aspects of education. The *". . . cognitive perspective"* (p. 31), he argues, relates to the successful application of knowledge and understanding to everyday situations. What he sees in an educated person is not only a body of knowledge accumulated solely for regurgitation at the opportune moment.

The process of education, Peters (1966) argues, focuses on procedural matters that take into account both the teacher and the learner. The

teacher arranges the purposeful transmission of educational experiences. On the part of the child the educational process should take cognizance of childhood and learning conditions. In this way, for the child, education (learning and understanding) can be seen to lead out of the education process (teaching).

An important dimension that the issues discussed above fail to address is one proposed by Bailyn (1960). The proposition is that education should be viewed *". . . not only as formal pedagogy but the entire process by which a culture transmits itself across the generations."* (Bailyn, 1960, p. 14). This view corresponds with the line of thought, in anthropology, that education should be regarded as the transmission of culture. (Singleton, 1974)

The term education, then, has a number of meanings attached to it depending on its use. It is important, for the purpose of the present study, to identify an appropriate one.

Gustafsson (1987), whose interest is to define the term education in the context of education and productive work, identifies two of its usages. Both are appropriate and relevant to his study. He proposes that education should be understood as both process and product. It is felt that this dichotomy is useful for the present study in that it caters for the dual meaning within the EWP concept.

1.2.2 Production

Before entering into discussion about the term 'production' it is fitting that its relationship with the term 'work' is established. In other countries education with production is called education and work.

Before independence, in Zimbabwe, schools encouraged work for African students. This decision was based on the strong belief that work was *". . . relevant to them because of their aptitude and future role as manual workers"* (Gustafsson, 1985, p. 11). The existence of the school garden was strong evidence of this notion (Chung and Ngara, 1985; Gustafsson, 1985). The F2 schools, which perpetuated this notion and survived up to 1980, were high on labour and low on supportive theoretical content (Chung and Ngara, 1985). What the F2 schools failed to offer in terms of content and popularity, they offered in terms of intensifying the dislike for work within school programmes. Sensing this dislike, Dr. Mutumbuka, then minister of education, felt the need to make explicit the distinction between the F2 schools and what EWP stands for. He pointed out that EWP did not imply the resuscitation of

the F2 system (Gustafsson, 1985). On these grounds it can be assumed that the term EWP was coined to avoid any negative and emotional association with F2 schools. It should be understood, though, that the two terms 'production' and 'work' mean one and the same thing.

Work can be viewed as the application of mental or bodily powers with the intent to do or make something (Hornby, 1986). But, in practical subjects, the practical activities can easily be observed while the mental activities which precede them are not so obvious and can easily be overlooked. However, it can be argued that mental powers and bodily powers should be viewed as complementary partners in any practical activity. This view is supported by the statement that EWP is concerned with marrying theory and practice.

In the study by Gustafsson (1987) it is understood that a person who partakes in an activity is involved in the process of work. On the other hand, the work process also has an end product - the artifact. Gustafsson's argument that work should be understood primarily as a process is not difficult to conceive. Perhaps his concern is to highlight the experiences which are the result of work situations. This could be expressed differently as already stated - that the experience of work develops the mind of the learner.

Gustafsson's standpoint should be accorded due respect. However, from a pragmatic point of view, it is worth considering that the end products of work (artifacts) contribute to the solving of societal problems. Thus, there would be no point in applying oneself to a task if its end product was not valued. For this reason, it can be argued, work as a product should have a justifiable co-existence with its above counterpart.

If this way of arguing seemingly introduces the question of the hen and the egg, it is worth considering where one should place one's priorities - on the experience of work or on the product. For this study it is difficult to de-emphasise the importance of either work as a process or work as product. Equal importance will be given to both aspects.

1.3 A model for analysis of education with production

So far this study has been concerned with elucidating and discussing how EWP can be understood. This treatment has revealed an important

premise. It would not be consistent with the overall concept of EWP to refer to any one of its individual aspects as the criterion for its (EWP) existence. Ideology, curriculum implications (cognitive or social values), school activities and the various meanings of the two terms "education" and "production" collectively contribute to make EWP a whole concept. Reference to it, though, may be made by pointing out individual aspects that form its integrated meaning.

To make a distinction between EWP as ideology and those individual tasks or projects that schools do when the principles of EWP are put into practice, the term *productive activities* will be used to refere to the latter. Mention has been made of the dilemma of technical subjects to identify and select productive activities. It has also been mentioned that statements concerning EWP do not specify the activities that can be done. To sort out this end, the nature and outcomes of productive activities found in the literature reviewed have been analysed. The analysis has shed light on three important conceptions. A productive activity can be:

1 a product of scholastic mental effort such as the successful completion of homework - (abstract production);

2 a product of manual work which is useful or can be appreciated as in cleaning the workshop, routine maintenance of tools and equipment and repairing of school furniture - (appreciative production);

3 a product of manual work which results in the production of tangible objects such as cabbages, chairs and school uniforms - (goods production).

Gustafsson (1987) rejects the idea of abstract production when it concerns goods and services. On the same grounds, this abstract production will also be rejected in this study.

By putting together the information accrued so far, it is possible to make a diagrammatic representation of what EWP, can impy. (see Figure 1)

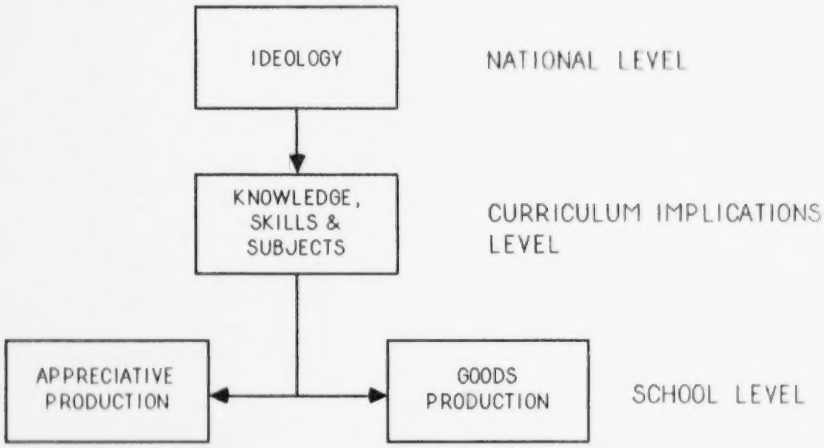

Figure 1. *The diagram represents the different levels at which education with production can be understood*

The three levels are interrelated in that the overall aim of EWP is the achievement of national development. But the inputs at various levels will differ and so will their focus. The national level focuses on needs that are intended to change people. By changing people it is assumed that they will be able to do certain things. At curriculum level the planners plan how this change shall be achieved. The school puts the plans into effect.

From the literature review, two criteria for doing or referring to production oriented activities in the schools have emerged. Firstly, productive activities can be done in order to accomplish certain types of tasks. Secondly, productive activities can be done in response to certain identified needs. These two criteria will be referred to as 'style' of production and 'purpose' of activity respectively.

In relation to style two alternatives have been identified. On the one hand, there are those productive activities which seek to maintain the existing environment and objects. On the other hand, there are those activities that seek to create new environments and objects. These two styles will be referred to as appreciative and goods production respectively. Even though working materials can be used in doing productive activities of the appreciative nature, the result is an improvement of existing products. Thus the creation of new environments or objects does not exist. But the goods type of production concerns the creation of new environments or objects which were non-existent prior to the activity.

With respect to the purpose of activity two reasons for carrying out productive tasks have been identified. On the one hand, productive activities can be done for the purpose of helping out. On the other hand, they can be done for financial gain. Productive activities according to these two purposes will be referred to as service and monetary production respectively.

By relating style of production to purpose of activity four categories of productive activities will emerge. The categories account for the existence of productive activities in terms of style and purpose. This is illustrated in Table 1.

Table 1. *Style of production in terms of appreciative and goods production related to purpose of activity in terms of service and monetary activities*

		STYLE OF PRODUCTION	
		APPRECIATIVE	GOODS
PURPOSE OF ACTIVITY	SERVICE	A	B
	MONETARY	C	D

So far, it has been argued that four different categories of productive activities can be identified. Productive activities can accordingly be placed in the different categories. In order to illustrate the activity that will fall under each category examples from woodwork will be used. In category A the appreciative-service production can mean tool maintenance so as to help out the school. In category B goods-service production can mean involvement in the making of school furniture with the purpose of helping out. In category C appreciative-monetary production can mean involvement in repairing the community's furniture for the purpose of raising funds through the charges made. In category D goods-monetary production can mean involvement in making furniture for the purpose of raising funds. (see table 2)

What is important, though, is that the activities chosen should suit the situations in the schools. But it should be understood that what determines whether the activity is 'service' or 'monetary' is not the

nature of the work: it is the purpose. Activities may look the same even though their purposes are different.

To sum up, EWP will be understood as: conscious and purposeful involvement in educative activities that seek to provide services and or goods in the school and the community in order to help-out or acquire material gain.

Table 2. *Category of production related to an appropriate school activity*

Category	Example of activity
A appreciative-service production	maintenance of tools in the workshop
B goods-service production	making school furniture at no charge for materials
C appreciative-monetary production	repairing the community's furniture for a charge
D goods-monetary production	making furniture to raise funds

1.4 The capacity of the school to engage in productive activities

So far this study has been concerned with discussing how the concept of EWP can be understood. In this part, the discussion will concern the school and its capacity to engage in productive activities.

The school is the institution within which the transaction between education and productive activities will take place. For a school to be productive, the interaction between the demands of production and the capacity of the school should be reconciled. The capacity of the school to engage in productive activities can be determined through the following

factors: resources, syllabus or subject content and school organisation. These factors will be elaborated using woodwork as the setting.

1.4.1 Resources

Resources which will negatively or positively affect a school's participation in productive activities include finance, materials, tools and equipment, teachers and students.

In workshop situations running costs for purchasing materials, accessories and maintenance of tools and equipment are much higher than those in ordinary classroom teaching situations (Bray et al, 1986; Lauglo and Lillis, 1988). Usually, activities in woodwork are restricted to the production of small articles like chairs or book racks for practice and subsequent assessment. It can be argued that any increase in production, beyond the making of such articles, should be reciprocated by a proportionate increase in initial funding. Such an argument should be easy to conceive. Involvement in making students' exercises, appreciative-service production and goods-service production deplete finances and materials. The Serowe Brigades in Botswana, for example, had large subsidies from the government and other organisations but had to sell their products to supplement their income (Bray et al, 1986). Service production, however, can save the school from bigger financial commitments directly or indirectly. But without payments being made for costs incurred during production, the departments concerned would shoulder their own expenses and those of others.

If productive activities should extend beyond the school boundaries the quality of goods made by the school enters into competition with commercially produced ones. Therefore initial material purchases should, ideally, reflect this fact. It can be assumed that the use of better quality materials can, in turn, enhance the quality of the finished products.

The necessity of costing the needs of an endeavour should not be underplayed (Cumming, 1988). Allocatory decisions, as well as other administrative ones, rely quite heavily on accurate articulation of these needs. Costing and budgeting would be necessary aids in the making of forecasts for the projected needs of a department. Quite often, failures of some endeavours can be attributed to inaccurately identified and ill stated needs.

Increased productivity and improved quality of production are closely associated with the availability of tools and equipment (Gustafsson,

1985). In addition to the high initial costs, tools and equipment are costly to maintain and service. The school, as may often be the case, may fail to keep them in good repair. Consequently, both a highly motivated but ill-equipped school, or a well equipped but ill-serviced one may both find it difficult to step up or meaningfully engage in productive activities.

One of the identified reasons for low productivity or the lack of it is inadequate expertise among teachers (Gustafsson, 1985). This problem can be attributed to: the nature and extent of initial training; work experience and whether the teacher received any form of training or not. In view of the huge expansion in education since independence (Mackenzie, 1988), the problem is perhaps inevitable. But ways of overcoming stagnation in productivity can be sought. Expertise from the community can be grafted into the school if needed and when it can be found (Bray et al, 1986). From this interchange teachers, students and the school are likely to benefit. More important, teachers would not have to be exposed to situations that they cannot cope with.

Students make mistakes because they are learners. By mutual understanding, production faults may be pardoned when they exist in production with the purpose of service, but the same may not be true when it concerns monetary production. To overcome this, techniques that seek both accelerated production and efficiency, as typified by mass production methods, may be adopted (Bray et al, 1986). It can be argued that such a pedagogical strategy marks a departure from schooling to outright training. But what should constitute technical education in today's world where quality, efficiency and accelerated production are the primary targets? Accordingly, it can also be argued that rejecting these considerations may constitute a rejection of the requisites of development.

1.4.2 Subject content and commitment

For any production scheme to be viable there is need to keep track of incoming and outgoing finances (Gustafsson, 1985). An assessment of all costs and expenses needed for the upkeep of productive activities would entail the formulation of a budget. To maintain accurate records of the periodic orders and payments, skills in book-keeping would be called for. Furthermore, if monetary production is considered, basic skills in costing are needed. Costing involves the accurate computing of the costs incurred in the production of a commodity. When the same type of considerations are used at all times, a standard charge for the consumer can be arrived at. Child (1984, p. 241) has this to say about costing: *"The amateur, in his home workshop, doing his small amount of paperwork in*

the evenings, may be inclined to regard the addition of a percentage ---as insignificant and too difficult to work out, but even very small firms would soon be out of business if they ignored these expenses." It can be argued, then, that a knowledge of budgeting, costing and book-keeping is essential if students taking part in productive activities should understand how to apply the knowledge learnt in EWP. But whether this knowledge should be acquired through practical experience (in the production process) or through other subject disciplines, is an issue to be sorted out by the school. There is a strong argument, though that the suggested knowledge should be part of school learning, and that its application is fundamental for any foreseeable future in self-employment.

It has been argued above that the availability of equipment, together with the use of appropriate production techniques, can considerably step up productivity. The inclusion into the syllabus of this knowledge and skills would help to facilitate national productivity. Such an approach is understandable and, probably, appropriate. Since production options are different, schools should be aware of the different working methods that can be used. This knowledge would serve as guidance in the generation of productive ideas.

An additional approach could be adopted if productive activities are known in advance. They could be planned in the same manner as other school activities. This approach would, more likely , elicit commitment to production and ensure the possibility of adequate planning both pedagogically and organisationally.

1.4.3 School organisation

The professional responsibilities of a practical subjects teacher are numerous and demanding (Lauglo and Lillis, 1988). Planning and supervising productive activities would more than likely increase the teacher's responsibilities. The extent to which the responsibilities will increase largely depends on two things. First, activities must be planned to suit available resources. Secondly, although it may assume a need for changes in available resources, the extent to which a school wishes to be productive should be decided.

For productivity to be smooth and efficient there is need to sort out issues concerning advance planning of activities, monitoring progress, allocating tasks to teachers and pupils, and carrying out periodic evaluation of accomplished tasks. Co-ordination of activities and the related planning would also need to be looked into.

Some responsibilities like book-keeping may, for administrative purposes, be restricted to the administrative staff. However, it can be argued that, if students were given this responsibility they could learn from it.

Students sometimes do group work in different parts of the school. Supervision of numerous and scattered groups may be difficult and may need careful thought. It may even require the adoption of strategies uncommon to mundane school workshop practice. In addition, if there is inadequate supervision, serious accidents may result from mishandling of tools and equipment.

Tools, equipment and special working methods can accelerate and increase production to a certain extent. Further increase can only be effected by an increase in time. Consequently, an argument for an increase in production should be supported by an increase in time allocated for productive work. Any changes in the timetable would of course, effect other subjects.

Production may be reduced when older and more experienced teachers leave a school for any reason (Gustafsson, 1985). It can be argued that the same could happen when student teachers leave at the end of their prescribed practice session. By resorting to long sighted administrative strategies this problem can be eliminated.

1.5 Research objectives

The literature review has shown that EWP can be discussed in relation to three levels. In order that EWP can be meaningfully interpreted into school activities an understanding of the whole concept is necessary.

Four different categories of productive activities have been identified namely: appreciative-service production; goods-service production; appreciative-monetary production and goods-monetary production. These can be used as a guide to the selection of suitable productive activities.

EWP has been discussed in relation to three influencing factors; resources, syllabus or subject content and school organisation. This study is based on all these considerations.

This study will be delimited to EWP in woodwork. The objectives of the study are:

1. **To determine the relationship between how EWP is understood and the choice of activities undertaken by;**

    a. headmasters,
    b. teachers and
    c. students.

2. **To investigate the existence of knowledge or school subjects supportive to EWP with reference to;**

    a. budgeting,
    b. ordering of working materials,
    c. costing and
    d. book-keeping.

3. **To investigate the availability of resources in terms of;**

    a. materials,
    b. tools and equipment,
    c. teachers (familiarity with different production methods) and
    d. students' expertise.

4. **To investigate organisational issues affecting productivity with reference to;**

    a. decision making
        (i) individual decision making
        (ii) decision making body
    b. responsibility
        (i) teachers' working load and supervision commitments
        (ii) students (posts of responsibility)
        (iii) records (who maintains records)
    c. time allocation
        (i) within normal time-table
        (ii) outside normal time-table
    d. finances
        (i) departmental allocation
        (ii) extra subsidies.

2. METHODOLOGY

In this part of the study the issues discussed concern the choice of schools and subjects; preparation of research instruments; reliability and validity; access to schools and how information was gathered.

The literature review revealed that EWP in Zimbabwean conventional secondary schools remains largely unexplored. The lack of knowledge about how EWP is understood and the capacity of conventional secondary schools to engage in productive activities is reflected in the objectives of this study. Besides this lack of knowledge, the research problem is also of a complex nature and consequently this study needs to be of the exploratory type. (see Selltiz et al, 1959)

2.1 Choice of schools and subjects

To make the best use of available time during the busy part of the school year (November to December) it was decided to use the closely situated schools in Harare where the researcher would be based. This would facilitate easy movement to and from the schools.

It was necessary to select schools that could be assumed to have different capacities since the particular type of productive activities that a school would engage in are dependent on the actual capacity of the school. In order to establish some criteria for this choice it was necessary to examine the backgrounds of the group of secondary schools that offered woodwork. All were government schools.

Before 1980 government schools were divided into group A and group B schools. The two groups operated under two different ministries. Group A schools served low-density suburbs and were well funded. Consequently they enjoyed good facilities in terms of buildings, equipment, learning materials and learning aids. Since group A schools served low-density suburbs the students were mainly White.

Group B schools were located in high density suburbs and were comparably poorly funded. Facilities and resources, like the ones cited above, were much poorer. Since group B schools served high-density suburbs the students were Black. A further distinction existed between some group B schools. The schools that were established earlier, so called well established schools, seemed to have more facilities and resources than newly established ones.

These schools are no longer referred to by the mentioned terms. But due to the respective historical, social, environmental and economic backgrounds of the schools one school was chosen from each of the following types;

one school: former group A,
one school: former group B - (well established) and
one school: former group B - (newly established).

These schools will be referred to as schools A, B and C respectively. The subjects chosen were the headmasters, teachers and students of the selected schools. Headmasters were chosen for their familiarity with overall school organisational issues. Woodwork teachers were chosen on their capacity as implementors or organisers of learning activities. In addition, their responsibilities involve identifying, requesting and maintaining the resources that are supportive to those learning activities.

Students, who are the recipients in learning situations, observe the school activities from a different point of view and thus yield a different perspective. As the target group, form three students were chosen for two reasons. Firstly, it was assumed that students with more experience in woodwork would be more informative about this field. Secondly, students in form four would be unavailable for the exercise due to their involvement in terminal examinations.

2.2 Research instruments

Considering the type of study it was decided that more could be learnt from headmasters and teachers through interviews than through the restrictive nature of questionnaires. Additionally, the benefits of the possibility to ask spontaneous questions was given due consideration. (see Bell, 1987 and Mason and Bramble, 1978)

The formulation of the questions for the school heads, teachers and students was based on the already operationalised objectives. Thus,

interviews for headmasters covered how EWP is understood and the choice of activities; the existence of book keeping and the organisational issues affecting productivity in terms of decision making, responsibility, time allocation and finances. (see Appendix No. 1)

The interview for teachers covered how EWP is understood and the choice of activities; the existence of knowledge or school subjects supportive to EWP in terms of budgeting, ordering of materials and costing; the availability of resources in terms of materials, tools and equipment and teachers' expertise; the organisational issues affecting productivity in terms of decision making, responsibility, time allocation and finances. (see Appendices No. 2 and No. 3)

Due to the large numbers involved and also the relatively simple type of information required it was decided to administer questionnaires to students. Besides economy in reaching the large number of respondents the use of a questionnaire offered anonymity. Furthermore, by personally administering the questionnaire, proper timing and accuracy were ensured. (see Travers,1966)

Only one question of the students' questionnaire was open ended and all four subsequent ones were closed ended. On the whole, the questions covered two objectives. Most questions concerned how EWP is understood and the choice of activities. The last question concerned the availability of resources in terms of students' expertise.
(see Appendix No. 4)

Two checklists were used to determine the availability of some resources. (see Appendices No. 5 and No. 6)

These lists determined;

1. working materials commonly used for students' exercises and other practical activities and

2. the existence of minimum equipment used for maintenance and servicing respectively.

Other resources like tools and certain equipment were determined through existing records (equipment inventories).

2.3 Reliability and validity

Certain measures were taken to ensure reliability of the students' questionnaire. Within the questionnaire reliability was ensured by: arranging the items starting with the simpler ones; riding the items of interdependability and any possible emotion; giving the respondents multiple choices and by making the test items simple. In addition, reliability was also ensured by the provision of written explanations of the key concepts raised in the questionnaire in order to familiarise the students with the issues in question. Lastly, the instructions were read out and similar verbal elaborations were given to each group in turn. (see e.g. Elliot et al, 1964)

To ensure reliability in the recording of responses all interviews were recorded on tape. (see Mason and Bramble, 1978 and Travers, 1966)

Furthermore, the items were designed so that the respondents would not feel threatened by the implications of the questions asked. (see e.g. Travers, 1966)

Validity of both interview schedules and the questionnaire was ensured through the operationalizing of objectives by ensuring that they covered the content of the whole objective (see Mason and Bramble 1978, Travers 1966 and Bell 1987). In addition all research instruments were selected and devised such that a representative range of responses and information would be elicited to fulfil the objectives of the study. (see Bell 1987)

2.4 Access to schools and data gathering

Primary and Secondary

Access into schools was obtained from the Ministry of Education through the University of Zimbabwe before the arrival of the researcher.

Appointments were made to visit the schools and information was gathered over 6 weeks in November and December, 1988.

A total of 11 respondents representing the staff of the schools were interviewed. They were distributed as follows;

school A - the headmaster and one teacher,
school B - the headmaster and five teachers and
school C - the headmaster and two teachers.

No selection of respondents was made. The total available staff from each department were interviewed. The number of staff was in turn dependent on the size of the schools involved.

In order to compile an accurate record of interview responses a tape recorder was used. The interviews took between 20 and 40 minutes. As back-up, in case of technical failure, notes were also taken in writing.

Equipment inventories were requested and collected between commitments.

Students' questionnaires were mainly administered by the researcher. This was either done by arrangement or by meeting the students during the woodwork lessons. In one instance a teacher who had taken part in two previous sessions administered the questionnaire. This teacher was provided with written instructions.

From the start absence of normal classes due to the examination period resulted in a marked absence of students from school. As the Christmas holidays approached the absence increased. When the average turn out of students dropped to 75 % the administering of questionnaires was stopped.

3. PRESENTATION OF RESULTS

Findings of this research are presented in four parts namely: the staff's understanding of EWP and choice of activities; students' understanding of EWP and its presence in the school; the existence of knowledge or school subjects supportive to EWP and availability of resources and, lastly, organisational issues affecting productivity in the schools.

3.1 The staff's understanding of EWP and choice of activities

Findings concerned with determining the staff's understanding of EWP and choice of activities are presented in three stages. The first stage focuses on the headmasters' and teachers' understanding of EWP, the second stage focuses on productive activities tried in the schools and the third focuses on the relationship between the staff's understanding of EWP and choice of activityes .

3.1.1 Headmasters' and teachers' understanding of EWP

A total of 11 members of staff made up the group of respondents. The group included 3 headmasters and 8 teachers. There was only one woman teacher. Two of the respondents, one woman and one man, were second and fourth year student teachers respectively. Only one of the qualified teachers had less than 5 years teaching experience.

Answers from headmasters and teachers were analysed to identify underlying dimensions that could be used as a framework for discussing the different meanings attached to the concept EWP.

It was initially found that EWP was stated from three different points of view. According to the the first view, EWP was stated in terms of *policy-oriented statements* . From the second point of view, EWP was

stated in terms of the *organisation of subjects* to accommodate the concept of EWP. From the third point of view, the concept was stated in terms of *the implementation of EWP*. These groups of statements, when viewed as a whole, compare well with statements in the three levels previously described as the national, curriculum and the school levels.

Subsequent important aspects in the meaning of EWP were identified for each of the above points of view or levels. Answers belonging to the policy-type of statements, previously described as national level, expressed the *benefits derived from doing EWP*. These benefits were also separated in terms of a time aspect. Thus some of the answers expressed *short-term benefits*; students "*. . .can make items like small stools , tables and they can sell them to people who want them ---- and they can use that money to buy materials. And, of course, some of the money can be kept by the school*".

Other answers expressed *long term benefits*; "*. . .you produce pupils who in turn will be able to serve the country in the professions or anything.*" When the two time aspects were examined, it was found that the meaning of EWP can be understood, firstly, as *benefits for the individual* and, secondly, as *benefits to the society*. This adds yet another aspect to this view of EWP namely, individual benefits and societal benefits.

Figure 2 shows the relationship found between the various aspects in this first view of EWP.

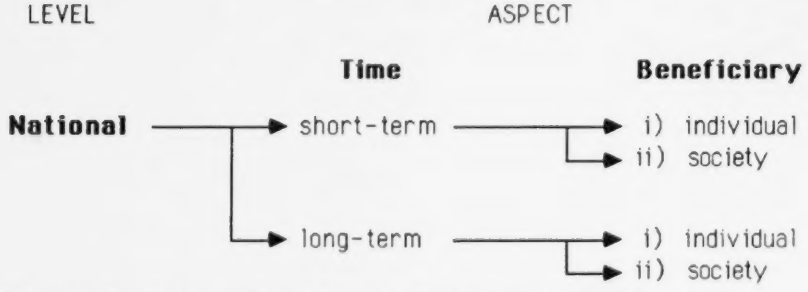

Figure 2. *At the national level, policy-oriented statements are expressed in terms of short-term and long-term benefits for the individual and for society*

Subject-oriented statements, that is, those at curriculum level, were also further examined and regrouped according to two aspects. Some of the statements in this group implied a *conscious recognition of a cognitive aspect within EWP*. Others implied a mere *association of EWP with practical activities*. The two aspects were generally expressed by the

respondents as *". . . the application of theory to practice"* and *". . . doing practical subjects"*. Thus EWP, from the second point of view, was seen to be concerned with the application of theory to practice or involvement in practical activities. These two aspects compare well with those previously identified at curriculum level and are illustrated in Figure 3.

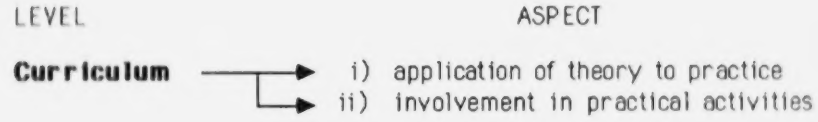

Figure 3. *In the illustration, statements at curriculum level are grouped according to the idea of combining theory with practice and according to the idea of involvement in practical activities*

Finally, from the third point of view, answers describing the implementation-type of statements could be analysed according to the suggested categories of production presented as a foundation of this study namely; *appreciative-monetary production, appreciative-service production, goods-monetary production* and *goods-service production.* The examples were given as the repairing of furniture for a fee, repairing school furniture to help out, making small items to raise funds and making small items for the school at no charge. These categories are illustrated in figure 4.

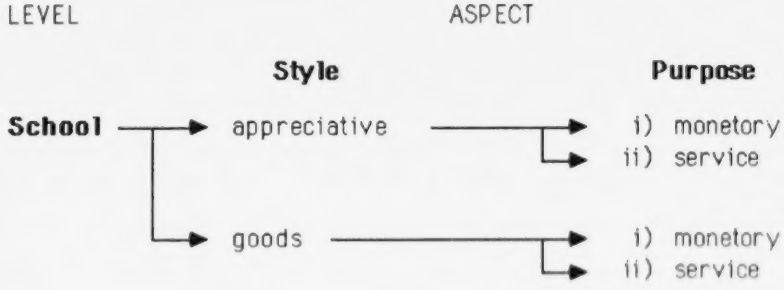

Figure 4. *Activities at school level grouped according to style and purpose*

Thus, it seems, a number of dimensions emerged from statements concerning how EWP is understood. In order to piece together the information implied by these aspects a summary of the findings was

made. Figure 5 represents the total view of how the concept of EWP was understood by headmasters and teachers and the activities involved.

LEVEL		ASPECT	
A	**National**	***Time***	***Beneficiary***
		short-term	individual society
		long-term	individual society
B	**Curriculum**	application of theory to practice involvement in practical activities	
C	**School**	***Purpose of activity***	***Style of production***
		appreciative	monetory service
		goods	monetory service

Figure 5. *The illustration shows the levels at which EWP was understood and the aspects for each level*

3.1.1.1 The value of EWP

In another question assisting to establish how EWP is understood, respondents were requested to describe the value of EWP. The descriptions were sorted into two groups according to a time aspect . One group described benefits that would be realised immediately. The other described those benefits that could be realised after school. The descriptions compare well with those previously described as short-term and long-term benefits.

The group describing immediate benefits expressed the acquisition of skills and encouraging students to "*. . . put into practice what they learn at an early age*". Similar statements have been found and have been previously described as short-term individual benefits. The group that described benefits that are realised after school expressed the production of individuals who have "*. . . the necessary skills to earn a living*" and a preparation for possible "*. . . self employment*". Similar statements have also been found and have been previously described as long-term individual benefits. Figure 6 illustrates the above findings.

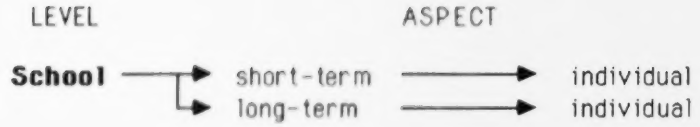

Figure 6. *The value of EWP is illustrated in terms of short and long-term individual benefits*

3.1.1.2 How the school and students benefit from doing EWP

When it concerns how the school and students benefit from doing EWP the descriptions were analysed in turn. Descriptions related to benefits to the school were divided into two groups. The focus of the first group was on the reduction of school expenses by either repairing or making things for the school. Similar activities have been identified and have been previously described as appreciative-service and goods-service production respectively.

Statements describing the students' benefits were also examined and grouped into three. The first group expressed the acquisition of skills and making of items for sale. This type of statements has been identified earlier and described as short-term individual benefits.

The second group described future employability and possible self employment. These statements have been found earlier and described as long-term individual benefits.

The additional aspect found was the feeling of satisfaction due to successful completion of products.

3.1.1.3 Subjects associated with productive activities

Finally, to help establish how EWP is understood respondents were asked to name those subjects, other than woodwork, they associated with productive activities. It was found that practical subjects, namely; metalwork, agriculture, fashion and fabrics, food and nutrition and building, were associated with productive activities.

3.1.2 Productive activities tried

Statements describing the type of productive activities tried in the school were separated into two groups. The first group described those

activities the departments had set out to do. The second one described isolated instances of activities that departments had been asked to do. Further examination of the statements describing scheduled activities revealed some common elements within them.The statements implied that the activities tackled by the schools were routine work which, in fact, was also part of the prescribed subject content. They also expressed involvement in practical activity.

In subsequent examination the activities that departments had been asked to do could be divided into those concerning repair work and those concerning the manufacture of objects. These activities compare well with the styles of production previously described as appreciative and goods production respectively.

In addition, the statements concerned with requested activities revealed a purpose aspect. Thus, the repairs were done in order to help out the school. Some of the manufactured objects were meant to be sold to the community. Others were made for the purpose of helping out the school. These purposes compare well with those previously identified as service, monetary and service respectively. Furthermore, the productive activities mentioned were repairs and manufacture. They compare well with the previously identified styles of production namely, appreciative and goods production respectively. Figure 7 shows the pattern resulting from grouping together the activities tried in the schools.

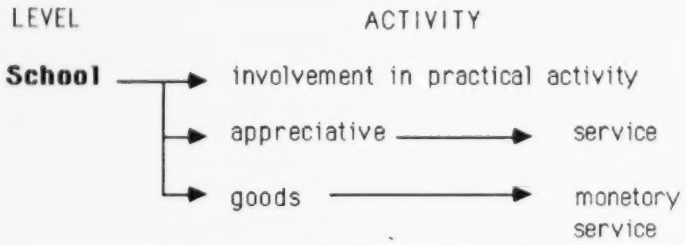

Figure 7. *Tried activities at school level*

3.1.2.1 Successes or failures encountered

Teachers' and headmasters' descriptions concerning successes or failures encountered in implementing EWP were not explicit. None related to either tried activities or issues emerging from the implementation process. Instead, some of the respondents enumerated isolated instances of students benefiting from their involvement in productive activities. Others enumerated those things they considered necessary in the implementation of EWP. Among those who claimed success no one made

a distinction between cases of conscious involvement and chance occurrence in productive activities.

Although there was no distinct evidence of conscious involvement in productive activities important issues came up. When success and failure-oriented statements were viewed side by side, the success-oriented statements focussed on a variety of aspects comprising the concept EWP. But they had one thing in common - that of being outcomes of EWP. Failure-oriented statements focussed on organisational matters that were obstacles to the possible implementation of EWP.

Subsequent scrutiny of the two groups of statements revealed further aspects. The success-oriented statements referred to future employment opportunities, acquisition of knowledge and skills, doing repairs, making of practical products and also the interest shown by students in doing EWP. Future employment successes were described as cases of students being *". . . employed soon after school"* or *". . . employed here and there"*. These compare well with the short-term individual benefits described earlier. Successes in acquisition of knowledge and skills for example *". . . kids being able to possess something"* by engaging in productive activities compared well with learning of practical subjects (at curriculum level). Lastly, successes pertaining to productivity like fixing of *". . . office fittings and repairs"* or the *". . . making of small items"* compared favourably with appreciative production and goods production respectively. It was found that the descriptions given in connection with successes compare well with previous aspects found in the national, curriculum and school levels (see figures 2, 3 and 4 respectively). One additional aspect was found, however. This referred to the students' motivation in EWP, namely, the *". . . high student interest"*.

The failure-oriented statements addressed issues that needed sorting out so that EWP could be implemented successfully. A closer examination of these issues revealed, in turn, four separate aspects: how different people interpret the concept of EWP; the lack of clarity in the syllabus concerning the content of EWP; the lack of some provisions to support EWP and the existence of some organisational obstacles.

In expressing the need for an understanding of EWP the following was said; *"When someone from outside the practical departments gives you work he expects you to stop whatever is in your scheme so that you can carry out what he wants himself . . .. A table takes quite some time to make. It's not just a matter of thirty minutes. It means somebody has been disturbed somehow for quite a number of hours. And if you were to say - now pay for this, he'd think he's not supposed to pay . . . that's what you're supposed to do for him - free, where in actual fact the job of being in the practical side is to teach."*

It was felt that the vagueness and limited content about the organisation of EWP in the curriculum was responsible for the contrasting interpretations of the concept by academic and practical subjects teachers. The contrasting interpretations would, in turn, affect the practical departments by making it difficult for them to implement EWP according to their capabilities.

Statements expressing failure due to lack of provisions to support EWP were varied. One concern was that the absence of EWP was partly caused by *". . . student teachers who are themselves not confident".* A further statement expressing the lack of resources indicated that financial constraints also prevent schools from assisting teachers *". . . with materials required to actually produce things that will benefit pupils more than is being done".*

When it concerned the sorting out of organisational issues some respondents blamed the failure to produce on the *". . . lack of interest in the boys."* Others expressed the following concern; *". . .the time we intend to implement EWP was so limited that we couldn't manage to put it into practice."*

In sum, the success-oriented statements described outcomes or benefits of EWP. But the failure-oriented statements related to factors that were obstacles to the implementation process. Some of the perceived obstacles may, at a superficial examination, seem to belong to decision making above the school level, for example, time and syllabus. However, at the school level there is always some room for manoeuvre that can be primarily utilised. Since there was no indication of this, all the obstacles are referred to the school level. Findings related to the successes and failures reported by the headmasters and teachers are illustrated in Figure 8.

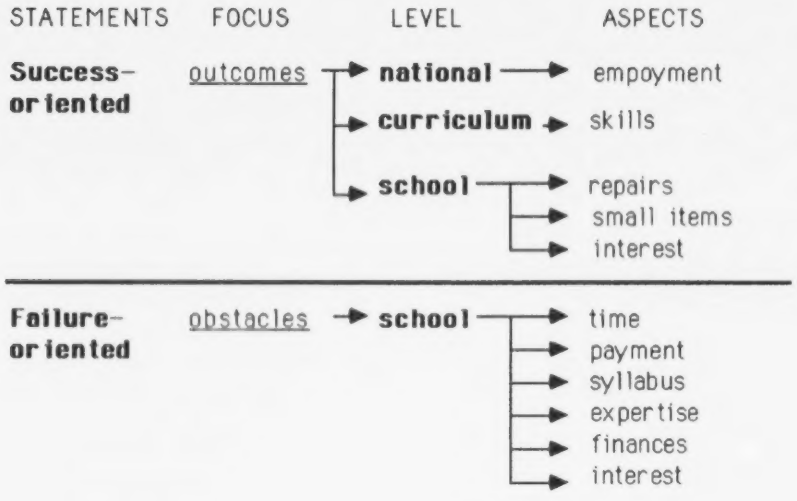

Figure 8. In the illustration success-oriented statements are expressed in terms of the three levels of understanding EWP. Failures are expressed only in terms of the school level

3.1.3 The relationship between the staff's understanding of EWP and choice of activities

Findings concerning the relationship between how EWP is understood and the choice of activities, were compiled according to each respondent's understanding of EWP, the productive activities tried by the respondent or by the school, failures encountered in doing EWP and the successes encountered in implementing EWP.

When the study was planned it was hoped that from stating one's understanding of EWP a parallel of tried activities would be found. It turned out however, that the respondents' understanding of the concept was so varied that it was not possible to establish such a relationship. Each of the respondents exhibit a complex understanding of EWP. And very few productive activities had been tried. So, instead, the best way of presenting the relationship is to present each respondent in turn. Results will be presented starting with those respondents whose understanding of EWP covered the national, curriculum and school levels. Second, results of the respondents whose understanding covered the national and school levels are presented. Finally, results of the respondent whose

understanding covered the national and curriculum level and those of the respondent covering the curriculum and school levels will be presented.

The understanding of EWP, by respondent A, fell into three levels - the national, the curriculum and the schools levels (see Figure 9). The issues described in all the levels referred to long-term individual benefits, acquisition of skills and knowledge and goods-service production respectively. Concerning tried activities appreciative-service production and goods-service production were reported. Instead of reporting failures the respondent enumerated the causes of failure to engage in productive activities. These were the lack of equipment lack of students' interest and lack of time to do productive work. The respondent reported no success.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv.	1 involvement in practical activity	1 goods-service
Tried activities		1 appreciative-service 2 goods-service
Failures		lack of; 1 equipment 2 student interest 3 time
Successes	no success was reported	

Figure 9. The relationship between how EWP is understood, tried activities, failures and successes for respondent A

Respondent B understood EWP as falling into the three levels at which EWP can be understood (see Figure 10). Described in the three levels were long-term individual benefits, application of theory to practice and appreciative-service and goods-service production respectively. It was expressed that the respondent tried goods-monetary production and the making of students' exercises. These activities were described as beneficial to the student. Failure, at national level, was reported as a few students being employed. At school level it was reported as the lack of equipment. The success reported fell into the national level. This was expressed as the employment of some students.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv.	1 application of theory to practice	1 appreciative-service 2 goods-service
Tried activities		(short-term indiv) 1 goods-monetary 2 students' exercises/ (goods)
Failures 1 few students were employed		1 lack of equipment
Successes 1 some students were employed		

Figure 10. The relationship between how EWP is understood, tried activities, failures and successes for respondent B

For respondent C, EWP was understood as falling into three levels (see Figure 11). Long-term individual benefits were found at national level. Acquisition of knowledge and skills was found at curriculum level. And appreciative-service production and goods-service production were reported at school level. Tried activities involved the goods-service type of production. It was mentioned that production did not reach the required level due to limited time. The reported success was of the appreciative-service and goods-service type.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv.	1 involvement in practical activity	1 appreciative-service 2 goods-service
Tried activities		1 goods-service
Failures required production level was not reached		1 limited time to do EWP
Successes		1 appreciative-service 2 goods-service

Figure 11. The relationship between how EWP is understood, tried activities, failures and successes for respondent C

Understanding of EWP, by respondent D, fell into three levels (see Figure 12). At the national level the long-term individual type of benefits were found. The curriculum level comprised knowledge and skills and the application of theory to practice. At school level the appreciative-service and goods-monetary types of activities were described. Tried activities were the making of exercises (goods). It was stressed that students benefit from it. No failures were reported. The reported successes were described as students being employed due to skills acquired in productive activities.

	LEVEL	
National	**Curriculum**	**School**
Understanding		
1 long-term indiv.	1 involvement in practical activity 2 application of theory to practice	1 appreciative-service 2 goods-monetary
Tried activities		
		(short-term indiv.) 1 students' exercises/ (goods)
Failures		
	no failures were reported	
Successes		
1 students employed here and there	1 skill acquisition	

Figure 12. *The relationship between how EWP is understood, tried activities, failures and successes for respondent D*

Respondent E understood EWP at all the three levels (see Figure 13). Long-term individual benefits were ascribed to the knowledge and skills learnt at school. Specifically, skills were described as the means by which students would gain future employment. These two aspects fall into the national and curriculum levels respectively. At school level appreciative-monetary and goods- monetary production were reported. No productive activities had been tried. But failure to implement EWP more meaningfully was reported. This was attributed to lack of finance, equipment and co-operation from the neighbouring community. These obstacles could be seen to be at the school level. No success was reported.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv.	1 involvement in practical activity	1 appreciative-monetary 2 goods-monetary
Tried activities no productive activities were reported		
Failures EWP not implemented more meaningfully		lack of; 1 finances 2 equipment 3 co-operation
Successes no success was reported		

Figure 13. *The relationship between how EWP is understood, tried activities, failures and successes for respondent E*

Understanding of EWP by respondent F fell into three levels (see Figure 14). At national level long-term individual benefits, long-term societal benefits and short-term societal benefits were described. Skills, at curriculum level, were described as the essence of learning for future benefit. And school activities were found to comprise the goods-service type of production only. The respondent had tried productive activities of the appreciative-service type. In expressing failure to do EWP it was reported that more productive activities could have been done were it not for the poor funding. Success was reported concerning former students who were now doing teacher training. Their success was attributed to the involvement in practical oriented subjects.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv. 2 long-term soc. 3 short-term soc.	1 involvement in practical activity	1 goods-service
Tried activities		appreciative-service
Failures	could have done more productive activities	1 poor funding
Successes 1 former students training as teachers	1 involvement in practical activity	

Figure 14. *The relationship between how EWP is understood, tried activities, failures and successes for respondent F*

For respondent G understanding of EWP was found to fall into three levels (see Figure 15). Short-term individual and short-term societal benefits were described at national level. The curriculum level was found to comprise the application of theory to practice. And at the school level appreciative- service and goods-monetary production were described. Tried activities were production of the appreciative-service and goods-monetary types. Failure to meaningfully implement EWP was reported. This was attributed to students' negative attitudes and failure of the school to provide its own working materials. No success was reported.

	LEVEL	
National	**Curriculum**	**School**
National 1 short-term indiv. 1 short-term soc.	1 application of theory to practice	1 appreciative-service 2 goods-monetary
Tried activities		1 appreciative-service 2 goods-monetary
Failures EWP not implemented more meaningfully		1 students' negative attitudes 2 failure of school to provide materials
Successes no success reported		

Figure 15. *The relationship between how EWP is understood, tried activities, failures and successes for respondent G*

According to respondent H, EWP was understood as featuring two levels (see Figure 16) the national and the curriculum levels. At national level there were long-term individual benefits and long-term societal benefits. At school level EWP was found to comprise goods-service, goods-monetary and appreciative-service production. No productive activities were reported as having been tried. Being a headmaster, however, the tried activities may have escaped the respondent's notice. All the reported failures could be seen to belong to the school level. These included examples of those things the respondent had asked the practical departments to make for the school. These were found to belong to the category goods-service production. Other failures included the lack of experienced teachers to engage in productive activities and lack of financial support. No successes were reported.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 long-term indiv. 2 long-term soc.		1 goods-service 2 goods-monetary 3 appreciative-service
Tried activities	no productive activities were reported	
Failures	failure to do the requested goods-service type of production	lack of, 1 teacher experience 2 lack of finances
Successes	no success was reported	

Figure 16. The relationship between how EWP is understood, tried activities, failures and successes for respondent H

Respondent I understood EWP as falling into two levels - the national and the school levels (see Figure 17). At the national level short-term societal benefits were described. At school level the respondent described goods-monetary production. Tried activities were those of the goods-monetary type. The reported failure was attributed to the fact that no positive steps were taken to implement EWP due to a number of obstacles. These obstacles were the existence of conflicting interpretations of EWP and the reluctance of some people, especially members of staff, to make adequate payments for objects purchased from the school workshops. No success was reported.

	LEVEL	
National	**Curriculum**	**School**
Understanding 1 short-term soc.		1 goods-monetary
Tried activities		1 goods-monetary
Failures	no positive steps taken to do EWP	1 conflicting EWP interpretations 2 reluctance to pay
Successes	no success was reported	

Figure 17. *The relationship between how EWP is understood, tried activities, failures and successes for respondent I*

According to respondent J, EWP was understood at two levels (see Figure 17). These were the national and the curriculum levels. At national level long and short-term individual benefits were described. The application of theory to practice was described at the curriculum level. Tried activities were the making of useful exercises which students later took home. Consequently the respondent described benefits of the short-term individual type. Failure to inculcate knowledge and skills was reported. Success was reported as students having learnt and understood the skills they were taught. These two were both seen to be at school level.

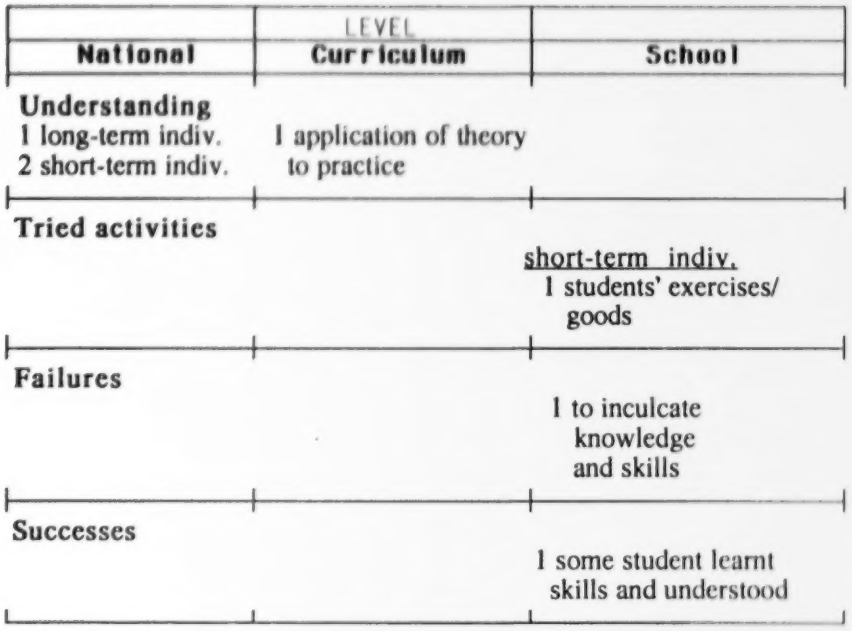

Figure 18. *The relationship between how EWP is understood, tried activities, failures and successes for respondent J*

Lastly, it was found that the understanding of EWP by, respondent K, fell into two levels namely the curriculum and the school levels (see Figure 18). At curriculum level the acquisition of useful skills was stressed. Appreciative-monetary and goods-monetary types of production were described at the school level. Only the appreciative-service type of activities were tried. Failure to adequately engage in productive activities was attributed to the lack of time in the school day. Success was described as student interest in joining EWP clubs and also the successful completion of small objects.

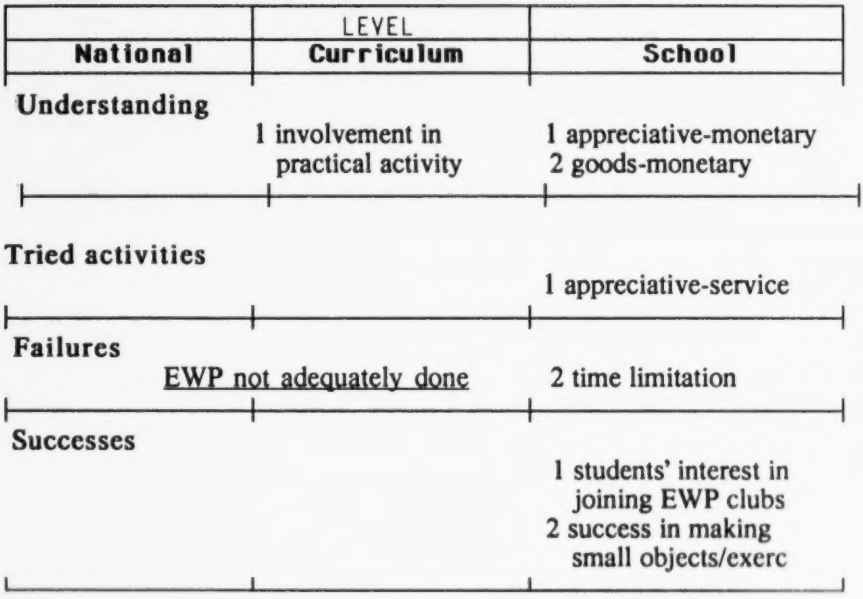

Figure 19. *The relationship between how EWP is understood, tried activities, failures and successes for respondent K*

In sum, even though no direct relationship could be found between the respondents' understanding of the EWP concept and the activities tried, at least some relationship could be found when it concerned their understanding at school level and tried activities.

In the first group comprising of respondents A, C, G and I, a one to one relationship was found. That is, some activities mentioned in their understanding of the concept had actually been tried in the school. In the second group respondents E and H mentioned some activities when expressing their understanding. But no activities were reported in the school. Respondent J did not refer to any specific activities in his understanding of EWP whereas the activities carried out at the school were those implied by his understanding of the EWP concept.

Finally, in the third group respondents B, D, F and K did mention some activities when they described their understanding of EWP. But the activities tried in the schools did not correspond with those they had described.

3.2 Students' understanding of EWP and its presence in the school

Results of the students' understanding of EWP and its presence in the school are presented in three stages: students' understanding of EWP; methods that students found easy to use and, finally, the relationship between the students' understanding of EWP and its presence in the school.

3.2.1 Students' understanding of EWP

The target group was made up of 107 form three students of whom 2/3 were boys and 1/3 girls. Woodwork classes in school A had boys only while classes in schools B and C had a mixture of boys and girls.

It was found that students' descriptions concerning the meaning of EWP could be grouped into two groups based on a time aspect. The first group described immediate concerns and outcomes of doing EWP. The second group described outcomes that could be realised over the long-term.

Further aspects were found from each of the above two groups. From the first group two aspects were found. In the first sub-division EWP was described as the marrying of productivity with theory. This aspect was described as the "*. . . application of theory to practice in order to gain an output*" and doing practical subjects in order to make "*. . . something useful.*" This type of statements holds the same meaning as those found among the school staff and previously described as belonging to the curriculum level. The second sub-division described benefits derived from doing productive activities. Descriptions in this sub-division referred to the acquisition of skills or the making of products for the benefit of the student or the school. Also these statements appeared among the school staff (at national level) and were described as short-term individual and short-term societal benefits.

In the group where the long-term outcomes of EWP were stated, the relevant descriptions concerned the acquisition of skills or "*. . . what will have been learnt*" for use later in life. Further scrutiny of this group revealed two other sub-divisions. As found earlier, some benefits were acquired by the individual and others by the society. The respective examples described these benefits as the making of projects for use in the home and the use of acquired skills or knowledge to produce *"something useful for the society"*. These statements compare well with the

previously described long-term individual and long-term societal benefits. These findings are illustrated in Figure 20.

The total view of students' understanding of the EWP concept was found to feature only the implementation or school level.

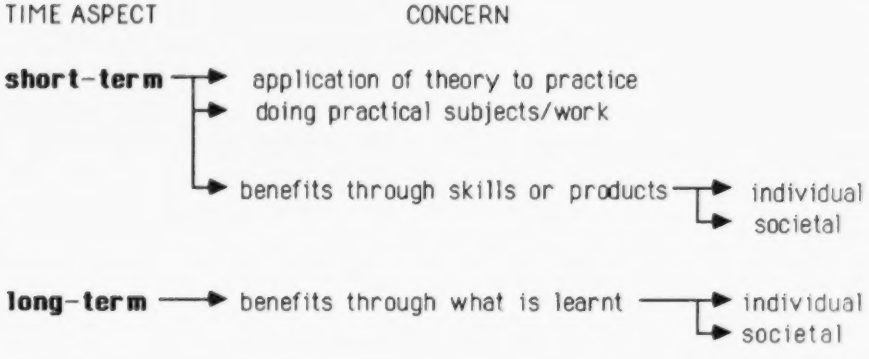

Figure 20. *In the illustration subject-oriented statements are grouped in terms of marrying theory with practice and in terms of involvement in practical activity. Benefit-oriented statements are grouped in terms of short-term individual or short-term societal benefits and long-term individual or long-term societal benefits*

3.2.1.1 School tasks that were considered as productive activities

Students were asked to indicate school activities that they regarded as productive. Table 3 shows the responses made in this respect. Repairing school furniture, making furniture for sale, repairing furniture for money and the making of students own articles were considered to be productive activities more than others. Sweeping had a high count in the "no" alternative. But doing theory homework and making furniture for teachers also registered high counts in the "not sure" and "yes" alternatives. It was found that students' opinions concerning what constitutes productive activities were quite comparable with those activities found in the schools.

Table 3. *Responses made in connection with school tasks which students considered to be productive*

	ALTERNATIVES				
SCHOOL TASKS	No	Not sure	Yes	No resp.	Tot.
Sweeping	53	27	25	3	108
School repairs	8	19	80	1	108
Theory homework	39	29	37	3	108
Furniture for sale	8	12	87	1	108
Revision for examinations	32	21	53	2	108
Furniture for teachers	44	28	34	2	108
Repairs for money	13	24	70	1	108
Making own articles	13	11	83	1	108

3.2.1.2 Subjects that were associated with productive activities

In table 4 responses in connection with subjects which are associated with EWP are shown. It was found that agriculture and woodwork were the subjects most associated with EWP. Home economics, English and mathematics were the least associated. From the students' point of view woodwork was considered to be one of those subjects strongly associated with productive activities next to agriculture.

Table 4. *Responses in connection with school subjects that are are associated with EWP*

	ALTERNATIVES						
SCHOOL SUBJECTS	Not at all	A little	Not much	Much	Very much	No resp.	Tot.
Home ec.	10	27	16	25	28	2	108
Agriculture	0	5	8	19	76	0	108
Woodwork	2	7	6	29	62	2	108
English	13	28	10	26	28	3	108
Mathematics	13	24	8	23	38	2	108

3.2.1.3 Beneficiaries of EWP

To expand the information about their understanding of EWP students were asked to indicate those persons and or establishments benefiting from productive activities.

Table 5 shows students' responses in connection with who benefits from the presence of productive activities in the school. It was found that the students and the school benefit. As to whether the staff benefit, a fairly high count on the elements "disagree", "not sure" and "agree" was found. While the findings indicated strong disagreement that the community should benefit, fairly high counts were recorded on alternatives "disagree" and "not sure". On the whole the respondents' opinions indicated that students and the school benefit most from the presence of productive activities in the school.

Table 5. *Beneficiaries of productive activities*

	ALTERNATIVES						
BENEFICIARY	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	No resp.	Tot.
School	2	18	7	37	42	2	108
Staff	14	37	25	26	4	2	108
Students	1	2	5	32	67	1	108
Community	30	24	26	15	11	2	108

3.2.2 Methods that students found easy to use

Students were requested to indicate those methods they either found easy or difficult to use. Table 6 shows their responses. Grouping together those students who can be regarded as taking a definite stand, ("very easy" or "easy"), it was found that the use of templates, working drawings and instructions & diagrams were rated easy. Concerning the use of jigs & devices and working rods no standpoint could be identified because the "not sure" and "no response" alternatives showed a high count. The working methods that the students perceived as very easy were the same methods that teachers used more often. Students seemed undecided about rating the use of mass production.

Table 6. *In the table working methods are shown in relation to how easy or difficult they are*

	ALTERNATIVES						
WORKING METHOD	Very easy	Easy	Not sure	Difficult	Very difficult	No resp.	Tot.
Jigs & devices	9	21	43	11	6	18	108
Working rod	13	26	39	5	5	20	108
Template	46	31	10	7	6	8	108
Working drwgs.	23	38	21	15	4	7	108
Mass prodctn.	10	15	46	22	4	11	108
Instns. & diags.	45	40	3	7	8	5	108

3.2.3 The relationship between the students' understanding of EWP and its presence in the school

Students' understanding of EWP fell into the implementation or the school level. Descriptions of their understanding referred to the application of theory to practice, doing practical subjects/work, short and long-term individual benefits and lastly, short and long-term societal benefits. (see Figure 20)

With respect to the beneficiaries of EWP the majority of the respondents indicated strong agreement that the students and the school (in that order) benefit from EWP. The community and the staff had very low frequencies in the same alternative ("strongly agree"). A correspondence was found between the beneficiaries described in the students' understanding and those indicated as the beneficiaries of EWP. That is, the individuals referred to in the understanding are related to the student as a beneficiary. And the society is related to the school and, to a lesser extent, to the community and the teachers.

Concerning school subjects the students' understanding of EWP involved doing practical subjects/work and the application of theory to practice in order to make something useful. This corresponds with the subjects that the majority of students "very much" associated with productive activities namely, agriculture and woodwork. (in that order)

Lastly, school tasks that were considered by the majority of the students as productive were the making of furniture for sale, making students' own articles, doing school repairs and doing repairs in order to raise

funds. These tasks correspond with those described in the respondents' understanding as the making of products which can be sold for the benefit of the school and the students. No mention of repairs was made in the students' understanding. However an association can be found between doing repairs for the school and doing the same task in order to raise funds. That is, activities benefiting the school and those done for the purpose of raising funds were described in their understanding of EWP.

3.3 The existence of knowledge or school subjects supportive to EWP and availability of resources

In this part of the study results concerning the presence of knowledge or school subjects supportive to EWP and availability of resources are presented. Information was obtained from teachers and headmasters.

Teachers were required to provide information about the inclusion of budgeting, ordering and costing into the teaching of their subject. Responses showed that only ordering was included. It was also found that ordering was taught in conjunction with ordering timber.

Information required from headmasters concerned the existence of book keeping as a school subject. Book-keeping, it was found, was not taught in any of the schools involved in the study. But two of the three headmasters expressed the wish to have it in their schools. The only snag, they said, was that book-keeping is considered as a practical subject. So by doing woodwork and book-keeping, for example, a student would be doing two practical subjects while others would be doing none. This would be in conflict with the policy in some schools to evenly spread the number of students exposed to practical subjects.

In view of the above findings it was found that EWP was not adequately supported by related subjects and related subject content.

Availability of resources was examined in relation to the following; working materials, tools and equipment, maintenance and servicing equipment and teachers' familiarity and use of different production methods. Findings related to these aspects will be described in the order already described.

3.3.1 Materials

This study was carried out at the end of the school year. So availability of materials could not be determined by a visual check since stocks were low or even finished due to their use in examinations and in the completion of other practical work. The teachers were therefore asked to indicate the types of materials they often used. A check list was used to determine the availability of materials.

Among solid woods clear and ungraded pine were the most commonly used. Mukwa was rarely used or not used at all. Other solid woods were meranti and gluelam. Besides being rarely used, meranti was used almost exclusively for examinations. Gluelam was used where the joining of boards would be time consuming and laborious.

Built up boards were used for a variety of activities. Pine blockboard was used to make tops for small tables and stools in order to save labour. Mukwa faced blockboard (white and brown) was rarely used due to its high purchase price. Only forms 3 and 4 used it. Okhoume blockboard was used less and less due to its rising cost and scarcity.

The 3 types of plywood were little used. The reason given was that the material was quite expensive. Pine plywood was used by two of the schools. It was mostly used for "small students' exercises" like picture frames and tea tray bottoms. The use of mukwa-faced ply was found in two of the schools. One of the schools had used all brown mukwa with its form 4 students. They were making bigger and more complicated articles. The other school used white and brown mukwa-faced ply with all classes.

No school had hardboard for some time since it was not available. In one school it was expressed that hardboard had not been used for years. Where old stocks were still in existence it was sparingly used for making small items with all classes.

The only abrasive used in all the schools was glasspaper. Garnet paper was not used.

The common types of finishes in all the schools were polyurethane varnish and wood paint. Varnish was extensively used by all classes in all schools. Paint was mostly used with form 3 and 4 classes. Other finishes used in the schools were bees' wax, stains, linseed oil and sanding sealer. But these were used to a lesser extent.

3.3.2 Tools and equipment

Tools and equipment were determined through the existing equipment inventories. In order to determine the availability of tools and equipment these were categorised according to the extent to which they would be needed in everyday use. To achieve this objective the considerations explained below were made.

Depending on the nature of workshop activities, some tools would be required for use by every student when doing guided exercises. This category of tools would need to be available, to students, at a ratio of 1:1. Other tools would not need to be available at the same ratio for the following reasons. Students work at different paces. Thus, the chances that they would all be doing the same operations, at the same time, would decrease. This difference would be more pronounced as the work advances. By the same token, the change from one type of tool to the other would be more varied as the work advances. Consequently, the type of tools and equipment in use at a particular time would also vary. Accordingly, the checklist ended up with the following categories; 1:1, 1:2, 1:5, 1:20, power tools, machines and machines (extra).

Some tools were not included among the formulated categories. The use of such tools as marking knives, cabinet scrapers, and other special purpose equipment was considered to be very minimal. In the absence of this type of tools alternative methods can be used effectively. It was, therefore, felt that their availability would contribute little to the productivity of the schools.

Lastly, separate categories were made of power tools and machines since these are usually available in a limited number (one per workshop) and their usage is not directly related to the number of students. Machines not usually found in standard school workshops were categorised as extras.

Altogether, seven categories were used. These comprised of;

category 1:1; working area (bench), chisel (mortise, 6 mm), chisel (paring, 10 mm +), jack plane, mallet, marking gauge, rule (300 mm) and try square.

category 1:2; mortise gauge and tenon saw.

category 1:5; cramp (gee), cramp (sash), hand drill, saw (coping), saw (crosscut), smoothing plane, spokeshave (flat-faced) and spokeshave (round faced).

category 1:20; bow saw, brace and bits, claw hammer, plane (plough), plane (rebate), screw driver, set of drills and sliding bevel.

power tools; drill, router and sander.

machines; bandsaw, circular saw, grinder, pillar drill and planer.

machines (extra); any additional machines found in the school that could either speed up production or improve the quality of manufactured goods.

When the tools and equipment were not available as above, a shortage was noted. If students could share the available tools with minimal disruption to work, this was termed a small shortage. A large shortage was when the teacher was obliged to group students according to different types of activities so that the tool shortage would not seriously disrupt lessons. When shortage was pronounced that it could be expected to hinder the planning of any work it was regarded as a critical shortage.

School A had one woodwork shop. A large shortage of equipment was found in category 1:5. The shortage was of gee cramps, hand drills, crosscut saws and spokeshaves. A small shortage was found in categories 1:1 and 1:20. The shortage, in category 1:1, was of mortise chisels and rules. In category 1:20 it involved the following; bow saw, brace, claw hammer, rebate plane and drills. No portable power tools were available but school A was the only one which had extra machinery namely; 3 centre lathes, 2 bench saws, and a sanding machine.

School B had 3 woodwork shops. There was a critical shortage of tools in categories 1:1 and 1:2. The only thing available for each pupil in category 1:1 was a bench. In category 1:2 both mortise gauges and tenon saws were in short supply. In category 1:5 coping saws and crosscut saws showed a small shortage, hand drills, smoothing planes and spokeshaves were critically short. In category 1:20 a small shortage was found since few replacements were needed. No portable power tools were available in this school.

In school C there was a critical shortage of 3 types of tools in category 1:1. These were mallets, rules and try squares. A small shortage of mortise gauges (category 1:2) was found. In category 1:5 there were no sash cramps. In this categor/small shortages of hand drills, crosscut saws, smoothing planes and spokeshaves were found. No bow saw, claw hammer or set of drills were available in category 1:20. School C was no exception concerning the total absence of portable power tools. In

school C all machines were available except a pillar drill. Available machines were not connected to the mains.

3.3.3 Maintenance and servicing equipment

Equipment for servicing or reconditioning of tools was divided into 3 categories. One category was of equipment for sharpening saws. The second category was equipment for sharpening knife-edged tools. The third category was other equipment which has a multi-functional use in maintenance and servicing.

In school A the following shortages were found;

saw sharpening equipment; - saw clamps
knife edged tool sharpening equipment; - oilstone slip
multi-functional equipment; - grease gun.

In school B shortages were found in two of the three workshops. These shortages were the following;

saw sharpening equipment; - saw files, saw set and saw vices each
knife edged tool sharpening equipment; - oilstone slip each
multi-functional equipment; - a grinder, grease gun and grease each.

Shortages in school C were the following;

saw sharpening equipment; - saw files,
knife edged tool sharpening equipment; - oilstone slip and oil can
multi-functional equipment; - a grinder, grease gun and grease.

3.3.4 Teachers' familiarity with and use of different production methods

In order to determine their familiarity with different production methods teachers were asked to state which methods they had used. A card showing six different working methods was provided.

The teacher in school A had used templates, working drawings and instructions & diagrams.

All five teachers in school B made use of templates and instructions & diagrams. Three of them used templates. But one of the three used

templates as a marking out tool. Two teachers claimed that they had used jigs & devices. But further questioning revealed that the methods described by one of them involved the use of machines and holding devices. The other stated that he used jigs & devices every week. Subsequent questioning failed to draw out a more explicit explanation of what was referred to.

Templates, working drawings and instructions & diagrams were used by both teachers in school C. As in school A, templates were used as marking out tools.

It was generally felt that students could not work without supervision. The main reason given was that, without strict supervision, students would spoil their work. It was also felt that they were not competent enough to work safely with hand tools and machines in the teachers' absence.

3.4 Organisational issues affecting productivity

This section focuses on organisational issues such as decision making and responsibility, time allocation and finances. The findings are given from the headmasters' and teachers' points of view.

3.4.1 Decision making

It was difficult to pick out, from the teachers' statements, those decisions they could themselves make concerning EWP. It was evident that they had little to decide as to which productive activities (projects) they should engage in. Although the time allocation for each subject was stipulated, it was found that headmasters and teachers were free to use any available time for EWP.

No examples were found where a decision making body met. But one teacher expressed concern over the way procedural matters relating to EWP were handled. He felt that a good number of people were involved in the formalities concerning EWP. These people were seen to *". . . run around"* before an ordinary request to repair or make something would be given the go ahead. It was felt that in order to smoothen the whole process the people doing the 'running around' should improve the communication among them.

One type of decision that headmasters had to make was how to deal with parents who did not wish their children to do practical subjects. Another was about students who did not like doing practical subjects.

It was generally felt that EWP would increase responsibilities or working loads. Three views were expressed in support of this opinion. The first view was that responsibility would increase for teachers only. The second view was that only the students would have an increased load and the third view was that the headmasters, teachers and the caretaker would also have more to do. Some respondents, however held the view that there would be no increase in work for anyone. Two reasons were given: one was that they felt EWP should be a voluntary school activity, the other was that there was so little EWP in the schools to generate extra work.

Suggestions to remedy the problems of increased responsibility were made. All of them were associated with the need for strict supervision. Some felt that, in the event of increased productivity, strict supervision was necessary to prevent accidents and bad workmanship. Other remedies included the following;

1. thorough tuition in the use of machines followed by competence tests,

2. more use of visual aids emphasising safety aspects,

3. turning off the electricity when the teacher's attention is required elsewhere.

4. the allocation of specialised tasks to certain students so that they may gain confidence and a feeling of responsibility and

5. allowing students to work only in small groups.

It was found that students' responsibilities were regarded in two ways. One way was that some of them would act as monitors, the other way was that students would be given special tasks to do as described in '4' and '5'.

No written records of EWP were available.

3.4.2 Time allocation

One common problem reported in all schools was the lack of time to do EWP. In order to increase productivity, a few respondents suggested the use of normal workshop time. Productive activities would have to be planned in advance, included in the schemes and lesson plans and carried out like any other woodwork lesson. It was suggested that time within the normal school hours could also be found by removing one subject from the school timetable. One suggestion for creating time outside the school timetable was to use students' and teachers' spare time, for example weekends. Another suggestion was to start woodwork or EWP clubs.

3.4.3 Finances

Problems due to low departmental subsidies were reported in all schools. All respondents, except one, said that departmental allocations were low.

It was found that no subsidies were made to alleviate the problems of operating on a *". . . shoe string budget"*. One view was that matters were worsened by people who expected departments to become a source of cheap furniture.

Two headmasters said that allocations could be reviewed if departments could *". . . prove their case"*. But there was no evidence that this had been done before. The three headmasters felt that their *". . . hands were tied"* concerning the actual allocation of departmental funds since the allocation was based on student ratios and the number and type of textbooks required in each department. They said that technical departments were, anywhere, awarded the highest allocations in their schools.

4. DISCUSSION

In this chapter a general summary is first of all provided in order to tie together the numerous and complex facets of the study. In the following two sections some of the remaining results are summarised and discussed. Finally, possible implementation of EWP is considered.

4.1 General summary

This part of the discussion highlights the major findings of the study. These are, how EWP is understood, the choice of productive activities in the schools, the existence of subjects supportive to EWP, responsibilities resulting from doing EWP, availability of time to engage in productive activities and the adequacy of financial support to do EWP.

Collectively, headmasters and teachers understood EWP at three levels - the national, the curriculum and the school or implementation levels. But individually their understandings were complex and so varied that no conclusions could be drawn from them. Although a comprehensive understanding was shown by the group very isolated cases of productive activities were reported.

The students' understanding of EWP was found to cover the school level. Students descriptions seemed to have more bearing on the benefits derived from engaging in productive activities.

A scrutiny of the productive activities described by the staff and students showed that they fell into the four categories which were identified in chapter 1 namely; appreciative-monetary production, appreciative-service production, goods-monetary production and goods-service production.

The choice of productive activities was to some extent influenced by the individual's understanding of EWP. For example, some headmasters and teachers reported that they had not done EWP regardless of the fact that they had unconsciously engaged in what could be labelled as productive activities. Others reported failure in doing EWP when they had not actually taken positive steps to implement it. Also some correspondence

was found between activities described by headmasters and teachers (at school level) and activities tried in the school.

As far as the students' opinions were concerned the implementation of EWP could be envisaged in different ways. Firstly, students indicated that woodwork was one of those subjects within which EWP should exist. Secondly, a correspondence was found between productive activities tried in the school, the students' understanding of EWP and those subjects that students considered as productive activities.

Out of the factors that were studied it was found that EWP was not adequately supported by relevant subjects and subject content.

Use of working materials was confined to the use of the cheapest and available wood products and accessories.

Availability of tools and equipment and servicing equipment, in the three schools, showed;

a small shortage in school A
a large shortage in school C and
a critical shortage in school B.

In the absence of purposeful commitment to EWP headmasters and teachers had mixed feelings about increased work load. When asked to speculate on the possibility of stepping up involvement in productive activities most of them felt that work would increase for students, teachers, headmasters and caretakers. Others pointed out that this would not be the case since EWP was, in their opinion, a voluntary activity.

It was expressed that increased supervision would be necessary if involvement in EWP was to increase. Students' responsibilities would include monitoring and doing specialised jobs. No administrative responsibilities for students were mentioned.

In order to make time available to do EWP as opposed to planned students' exercises, three alternative suggestions were offered. Productive activities could be done either during the normal school timetable, or as club activities or even during week ends. The first two alternatives had been tried but the last one had not.

All schools reported inadequate funds. This was already affecting the existence of the prescribed woodwork. So, it was felt, funds would be needed before EWP could be meaningfully implemented.

4.2 How EWP is understood and tried activities

There was a correspondence between the few activities tried in the schools and those that students perceived as productive activities.This was evidenced by the more frequent appearance of descriptions of goods-monetary and appreciative-service production and the less frequent appearance of descriptions of goods-service and appreciative-monetary production in both instances. But as to tried activities, goods-service production was not mentioned.

It is difficult to account for the high frequency of goods-monetary production because it is not quite clear whether respondents referred to conscious involvement in EWP or products resulting from ordinary practical tasks. This needs an explanation.

In woodwork departments the main thrust is, by necessity, in the making of small objects. There are generally two channels through which these objects can be disposed of or utilised. Firstly, it is an obligation that students keep them because they usually contribute towards the cost of materials.This is done through a special fund often termed the general purpose fund. Secondly, the objects can be kept by the school for a number of reasons; if students have not paid the above mentioned fee, if students do not wish to take the objects because they are incomplete and when the objects are of too poor a quality to take home. So, on completion, these objects can be sold to cover the cost of materials or kept in the school. It is therefore difficult to tell what the respondents really meant when they described the goods-monetary type of activities: selling of the objects that students leave in the school or the purposeful manufacture of objects with the intent to implement EWP.

As to appreciative-monetary production and goods-service production, a number of important issues turned up. Appreciative-monetary production, which has a high potential for raising funds, had not been tried yet students referred to it as a productive activity quite frequently. It is possible that students expected departments to utilise its fund raising capacity. It could also mean that, in practice, appreciative-monetary production was difficult to implement due to the limiting factors already discussed.

Of all the four categories of production it is easier to understand the position taken by both groups of respondents about goods-service production. The problems that activities of the goods-service type would involve have been discussed. On the one hand, goods-service production

was found to consume materials and time and needed more expertise. On the other hand, the intended buyers objected to payment of fees that reflected the proper value of the goods due to their poor quality.

It has been found that the factors studied in the literature review could be responsible for the difference in frequency between activities described in the understanding of EWP, and tried activities. These factors are materials, tools and equipment, teacher expertise and student expertise. How these factors would influence productivity will be discussed for each of the categories starting with appreciative-monetary production.

Appreciative-monetary production, though seemingly the least costly to engage in, would present the most problems. Constant production would rely on two crucial issues. Whether repair jobs are available or not and whether there is a willingness to pay for services rendered.

It was found that departments were not satisfied with the funds they were allocated. It was also expressed that funds would not stretch beyond making the stipulated school exercises. Since it can be assumed that goods production cannot exist without the use of materials, it is difficult to see how it can survive without more funds. As to goods-service production it would be undoubtedly difficult for departments to buy materials with their small allocations and then give the product away. Surprisingly, goods-service production was reported. This may imply that, regardless of their impoverished financial standing departments were still able to engage in goods-service production. Perhaps this could be accountable by the fact that very few cases of this type of activity were reported.

One factor considered as affecting production of the goods-monetary type is student expertise. It was found that one of the reasons for refusal to make adequate payments for goods made in the school was their low quality. The reported high cost of materials indicates that goods production should be quite costly. In addition it was argued that without the use of alternative methods of manufacture, goods production would be time consuming and the product faulty. The factors described weigh heavily on the overall quality and production cost of the finished product. Even more so they weigh quite heavily on the possibility of economically engaging in goods-monetary production.

If the rationale behind EWP emphasised only the learning aspect then there would be no need to consider economy. But since economic considerations are part and parcel of real life it can be argued that EWP which fails to account for this aspect is not representative of life situations.

Although appreciative-service production was found to be the one most tried activity in the schools, in fact, the number of instances when it had been tried was still very low. It can be argued that since repairs do not depend heavily on the purchase of new materials they must be the cheapest to engage in. But it should be realised that student expertise and time factors still weigh heavily on any sort of productive activity that depends solely on students' participation. Furthermore, this type of activity is not completely cost free. Accessories like nails, screws, glue, polish and abrasive paper are needed. So it can be argued that in workshop situations cost free production is seldom encountered. It is therefore possible that the accumulative effect of the lack of materials, lack of time and lack of student expertise could adversely affect the existence of appreciative-service production.

The fact that very few productive activities had been tried and also that goods-monetary production was not represented can be interpreted in a number of ways. One interpretation would be that this finding was not in keeping with the comprehensive theoretical knowledge displayed by headmasters and teachers about what EWP meant. Another interpretation could be that respondents were less informed about how to implement EWP in practice. Yet another could be that efforts to engage in goods-monetary production and indeed stepping up production of any of the four categories were hampered by the obstacles existing in the schools.

4.3 Encountered or perceived obstacles

From the focus of the study two main factors are crucial for the implementation of EWP. These are one's understanding of the concept, and the capacity of the school to engage in productive activities. Because different understandings, collectively, form a comprehensive understanding of EWP they can be considered as furthering the implementation process. These differences can also present ground for misunderstanding between people holding different views. From this premise it can be argued that differences of how EWP is understood can be viewed as an obstacle. Any action that is directed towards redressing the above situation can therefore be seen as an effort to remove obstacles. With this view in mind there is need for teachers and headmasters to understand the position of departments trying to implement EWP in terms of what is possible and what is not possible to do. It can be argued that the views of persons from outside the department would help to remove the biases and stagnation of ideas from those within, but the views from inside would help to put the problem into context. It can be argued further, that more sharing of ideas and

responsibilities should be encouraged within departments. Departments should also realise that the ideal situations and conditions for the implementation of EWP do not materialise on their own. In fact, they are created.

Implementation of EWP was hindered by: lack of clarity in the syllabus as to what EWP entails; lack of time to engage in productive activities; the lack or shortage of experienced teachers; lack of financial support; the lack of cooperation when it involved payment for materials used to produce things in the woodwork departments and, lastly, the lack of interest on the part of the students. The appearance of these factors in the schools can be viewed from two stand-points. Firstly, they illustrate that the factors identified in this study should be perceived as real obstacles to the implementation process. Secondly, their occurrence indicates that obstacles do exist and that something must be done about them if EWP is to get off the ground.

It was also found that little effort had been made to rid the schools of these obstacles. One reason could be that the schools did not seriously consider doing EWP. It could also be that the teachers were preoccupied with more pressing issues to take note of the obstacles. Perhaps, too, there had been little or no generation of ideas of how to sort out the problems at hand.

It is possible to find ways of removing the obstacles. One way would be to seek help and support from outside the school. But this initiative is outside the parameters of this study since the objective concerns the capacity of ordinary secondary schools. Another way would be to plan and make changes from within the school. Some modifications suggested by headmasters and teachers to achieve this will be discussed.

Concerning the syllabus it was felt that it should be more explicit as to what EWP entails. This would help departments to understand EWP better and would pave the way for the implementation process. But as described earlier, a prescriptive interpretation of EWP could not be representative of all situations in the schools. No matter how explicit the syllabus may be the onus would still rest with the individual schools to adapt EWP to their own situations.

The use of time within and outside the normal time-table was suggested. Within the normal time-table time could be utilised by planning in advance and carrying out productive activities as for any other school lesson. A slight problem could arise if this is not carefully thought out. If students do not make articles to take home parents may question why they should be contributing to the general purpose fund. It is also possible that the motivation resulting from the prospect of taking

something home may be removed from practical subjects. To avoid this it would be pragmatic and fair to use separate funds for things that students will not keep so that materials are always available to make articles to take home.

The use of separate funds should not be seen as a separation of EWP from the teaching of school subjects. Rather, it should be seen as a mere financial consideration. If this is not done the two may be drawn further apart due to lack of funds to support them equally. Faced with a critical shortage of funds schools might have no option but to do only the work that is prescribed by the syllabus.

As for time outside ordinary school hours EWP could be done during the week ends or it can be done as club activity. The use of week ends could mean added expenses in bus fees. So schools would have to be prepared to make a convincing argument to parents. Production clubs also seem a viable option since it would only involve the use of ordinary school time. But there was a general complaint that no time could be found within the normal school time-table. For those holding this view it would be difficult to see where this time could be found. If it is general practice that club and sporting activities are allocated time during the school day, then it can be argued that production clubs could utilise this time. The suggestion that time could be created by removing one or more other subjects from the time table seems out of question since headmasters seemed to find this idea unacceptable. One possibility that the respondents overlooked was to accept that there was no call for schools to produce like full-time factories unless this is within their reach. Schools could plan to produce within the confines of the time they already have. The advantage of advance planning is that it decreases the occurrence of what has been described as chance activities. Instead, scheduled or planned activities would be undertaken. Furthermore, there would be time available for costing the exercise before unwise commitments are made. An additional option would be to utilise the time at the beginning and at the end of each term when little or no work from the syllabus is planned.

As for the lack or shortage of experienced teachers, little can be done about the employment of different staff in the school. Instead something can be done to share expertise in the organisation of EWP. There were no records of EWP in the schools and there was no indication of the use of a decision making body which could plan and organise productive activities. It can be argued that if group meetings were held it would help to generate sensible and practical solutions and all would learn from it. Furthermore, if records were kept continuity of EWP would be furthered by the availability of tried and established solutions.

Lack of adequate financial support was strongly expressed by all the headmasters and teachers in the schools. Though there was clear evidence of the inadequacy of financial support headmasters argued that departmental allocations were worked out above the school level. But no evidence of previous attempts to increase allocations for the woodwork departments was found even though some headmasters expressed that possibility. Faced with this worrying shortage of finances the departments could have, at least, tried to raise funds. Again evidence of this was not found.

Concern was shown that school staff wished to use the technical departments as sources of cheap furniture. It was mentioned that there was a difficulty in convincing them to make appropriate payments for articles manufactured in the school. The reason for adopting this stand (lack of co-operation in paying) was given from the angle of the quality of the product. It can be counter argued that those who did not recognise the need to pay may not have realised the expenses resulting from the manufacture of objects and wished to complain about the quality of products in order to avoid paying. Or is it that the whole issue may have resulted from the concept of helping out being, intentionally or unintentionally, taken beyond its normal proportions? It is difficult to account for this anomaly with greater certainty. Maybe a method of creating an understanding of costs incurred during workshop production could be arrived at by educating other staff during professional meetings. A more professional option would be that costing of goods or repairs should be accurately done and the computations made available for those wishing to see them. This strategy would help instil confidence in the buyer that charges are not a product of impulsive guesswork. Departments should also be responsive to this complaint about quality if their products should be inviting.

The last of the obstacles was lack of interest on the part of the students to engage in productive activities. It is difficult to tell the extent to which student interest affected productivity since this aspect is outside the scope of this study. However, it would still be proper to speculate that perhaps students did not understand why they were doing the so called productive activities. But since a match was found between the activities that the schools tried and those that the students regarded as productive activities, and also that doing practical activities (making of students' own articles) was frequently described as a productive activity, there should be no contradiction concerning what constitutes productive activities. Perhaps the choice of productive activities could also have contributed to the lack of interest. In this study it is difficult to be certain that students' lack of interest was a hindrance to the implementation of EWP since there is more evidence that very few productive activities were actually tried. Besides, it is not possible to say for certain what it is that students lacked

interest in. In that case those reporting lack of interest would have to re-examine their stand as to what constitutes productive activities. Also, it would be necessary for schools to appreciate that students might show no interest if they overly engaged in those activities that did not benefit them directly. Especially when they have contributed to the general purpose fund.

There was an indication that one of the main causes of failure to engage in productive activities was lack of purposeful planning. No school had formulated a clear policy of how they intended to adapt or had adapted EWP to their situation. This could explain why there were descriptions concerning what the schools had done at one time or another instead of descriptions about what they usually did.

To further the implementation process a school should try to establish whether, and if so, why it wishes to engage in productive activities. The type of activities should be defined. This would actually be a problem solving process that entails the identification of a need on which to base production strategies. It can be argued that if production is done to satisfy a real and immediate need then it would not be viewed as a burden and its broader implications can also be realised. The four categories could be a useful starting point for discussion of different options.

4.4 The implementation of EWP

The obstacles found in the three schools were more or less similar. The main differences were the availability of resources. Specifically equipment. So, speculation about the possible implementation of EWP will be made for schools A, B and C based on the availability of equipment, finances and working materials; the use of different or alternative production methods and students' expertise.

- A small shortage of equipment was found in school A. From the start two problems can be identified. These are the the lack of funds which, in turn affects availability of materials. Whether school A wishes to take on board the concept of EWP or not, these specified problems will not cease to exist because it has been established that more money cannot be found within the present budget. So, productive activities could be engaged in for the purpose of raising funds and also to replace the few pieces of equipment needed.

In the absence of financial support and, to a smaller extent, materials, the suitable types of production would be the goods-monetary or the appreciative-monetary categories. The advantage of appreciative-monetary production (repairing things in order to raise funds) is that little material would be used. Goods production (the manufacture of small objects) would be possible though it does consume more material. To step up productivity, without adding substantially on time, the school would have to explore the use of mass production. Although the available equipment would not hinder individual involvement in any way, it would be necessary to discourage it when engaging in activities of the goods-monetary type.

School A was found to have more machinery than the other schools. This additional facility could be utilised both to accelerate production and to improve the quality of the products.

A somewhat different situation is found in school C which has a large shortage of tools and equipment. Identified problems can be described as the large shortage of tools and equipment, inadequacy of funds and also the shortage of materials. Consequently the appropriate strategy here would be the appreciative-monetary type of activities. Appreciative production does not depend so heavily on the use of equipment. Although goods production would not be quite suitable, few small and simple objects could be produced. By adopting mass production the few tools can be utilised more effectively. Only a small number of tools would be needed for each of the small groups carrying out the different operations in the production line. The main objective would be to raise funds to buy tools and materials. Since it was found that the machines were not connected it would not be possible to use them as an additional facility to speed up production.

A critical shortage of equipment was found in school B. So the problems in this school can be identified as the critical shortage of tools and equipment, inadequate funds and, linked to financing, shortage of materials. With a critical shortage of equipment only appreciative-monetary production would be suitable. Goods production, even on a very small scale, would use up the much-needed funds that are better saved for either carrying out students' exercises or replacing some pieces of equipment and tools. Since it is appreciative production that the school should ideally engage in, the use of mass production would not be suitable for repair work. Work would therefore have to rely on the available tools and equipment.

Some machines were found in school B. So it would be possible to speed up production by using them where ever applicable.

The above discussion has focussed on production that is dependent on tools and equipment. Furthermore, the main reason for engaging in the mentioned activities is to raise funds. Regardless of type or purpose of these activities there are other matters that would need serious consideration. For example, the use of time within or outside the normal school hours and how funds are recorded, kept and utilised without conflicting with ministerial policies.

School departments would also have to realise that the extent to which they are productive would depend on the time found to engage in the chosen activities. Further, mass production would be resorted to not only in order to step up productivity but also to improve the quality of the product.

In the event of the departments acquiring additional funds and materials, more ambitious production could be done. But still consideration should be given to resources that can be utilised. In goods-service production, tools such as bench hooks, mallets and marking gauges could be made. In ordinary school workshops these tools are frequently damaged since they are made out of wood and also since they are, by necessity, some of the most heavily used.

To make the most, of the identified four categories production should not be restricted to working with existing or manufactured objects only. It should also be undertaken for the purpose of maintaining tools and equipment (appreciative-service production). This, in turn would help to avoid spending large sums of money in paying specialists. A method similar to mass production could be used here. Students who are identified as having an ability to do certain maintenance activities could be specially trained to do tasks such as sharpening knife edged tools and saws. These tasks have got to be specific because students cannot, within the short time they are in school, learn to do all these specialist tasks. Thus, the unwritten policy is that students do not do tool maintenance since there is risk of damage to the tools or injury to the student. But the use of students who show an ability for these activities eliminates such risk. In fact teachers would then have more time to concentrate on planning productive activities for the benefit of both the students and the school.

If productive activities are tried on a larger scale than conventional secondary schools are doing now, teachers should consider sharing responsibilities. For example, large-scale repair work would involve numerous other tasks. Next there is the task of planning and supervising the actual repairing, recording incoming and outgoing funds, keeping the money in a safe place and finally deciding how the money shall be used. Here it is critical to plough back some of the funds used for the

production. Overlooking this would constitute the surest way of hindering further productivity. It is thus evident that there is need for extensive research in the area of EWP. Primary attention needs to be paid to the possibility of including into the conventional secondary school syllabi topics or content supportive to EWP and also a clarification of its position through additional knowledge.

Should EWP be done because it is expected of schools to do it, then EWP may not be problem solving and motivating. If it is adopted to solve real problems which, undeniably exist in many schools, then EWP may be found to serve as an instrument for school and societal improvement. In this context the four categories identified in the study may serve as a dependable guide to the selection of solutions for EWP.

One last word. It has been seen that teachers and headmasters understood what EWP meant - in theory. They had, however, not actually put it into practice. Why? There were a number of reasons. EWP had not been thoroughly thought through, defined and understood in terms applicable to the school. There were several obstacles: the usual lack of funds, materials and equipment and perhaps lack of support from colleagues and headmasters. It would be comforting to know that an effort was made to seek this support. Perhaps too there was a lack of commitment or enthusiasm. Would this be because the obstacles were so numerous that they caused frustration among teachers?

Finally, it is the teacher who should decide how EWP can be adapted and do so to the best of his ability. This requires initiative, hard work and above all a lot of patience. As in every educational endeavour, success or failure depends on the teachers. Are the teachers going to make EWP work? For the benefit of all departments, the school, the students and society, they must.

* * *

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APPENDICES

Appendix 1 Headmasters' interview schedule
Appendix 2 Teachers' interview schedule
Appendix 3 Cards used during interviews with teachers
Appendix 4 Students' questionnaire
Appendix 5 Checklist for commonly used materials
Appendix 6 Checklist for maintenance and servicing equipment

HEADMASTERS

1. Describe in your own words what you think EWP means.
2. a. What sort of productive activities have you tried in this school (department)?
   b. In the event of doing EWP, what activities do you think the school (department) should engage in?
   c. Which subjects do you associate with productive activities?
3. What do you consider to be the value of EWP?
4. a. Would the school benefit from doing EWP and how?
   b. Would students benefit from doing it and how?
5. What successes or failures have you had in implementing EWP?
6. a. What organizational matters do (would) you find stemming from engaging in productive activities?
   b. Does (would) it create additional work for those concerned?
   c. How do you handle this?
7. a. Are you satisfied with the present number of productive activities?
   b. Would you like to see an increase in productive activities?
   c. How do you think this can be achieved?
   d. Would you consider increasing the time allocated for productive activities?
   e. How would this be done?
8. a. Are you satisfied with the usefulness of the present productive activities?

b. Would you like to see more useful activities being done?

9. a. What considerations do you make when allocating funds to various departments?

b. On what grounds would you increase the funds allocated to a particular department?

10. How do you think EWP can be facilitated?

11. a. Do you offer book keeping?

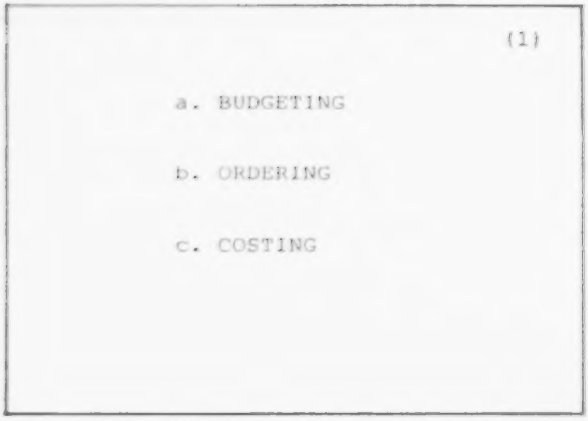
b. How did it come to be included?

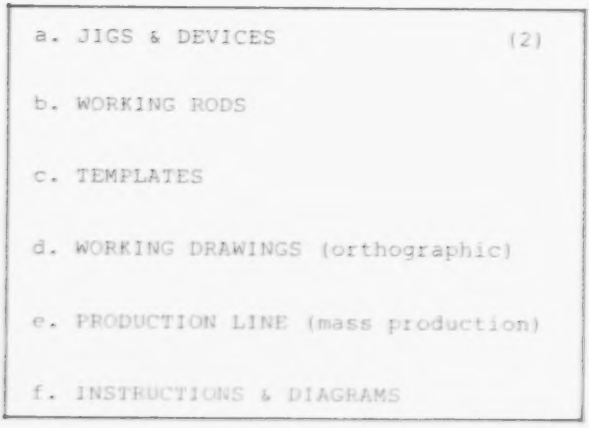
TEACHER

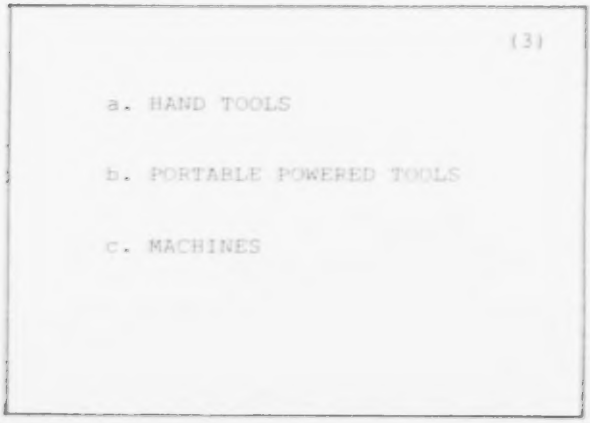
1. Describe in your own words what you think EWP means?
2. a. What productive activities have you tried?
   b. In the event of the school doing EWP, what activities would you engage in?
   c. Which subjects do you associate with productive activities?
3. What do you consider to be the value of EWP?
4. a. Would the school benefit from doing EWP and how?
   b. Would students benefit from doing it and how?
5. What successes or failures have you had in implementing EWP?
6. Have you touched upon any of the areas shown on this card?
7. On this card I have written some of the methods used to facilitate the manufacture of artefacts in the workshop.
   a. Which ones have you tried?
   b. In what situations/types of production have you used them?
8. a. What organizational matters do (would) you find stemming from engaging in productive activities?
   b. Does (would) it create additional work for those concerned?
   c. How would you like to see this handled?
9. How do (would) you ensure effective supervision and adherance to recommended safety measures when (if) students are (were) involved in a number of projects in the workshop and around the school?

10. Do you include productive activities in your planning?
11. Is the allocation of funds to the department adequate?
12. Would you say that, financially, the department is adding to its budget by engaging in productive activities? (Other than students' own work).
13. a. Is the rate at which you accomplish productive work matching the demands for you to produce?
    b. Do you wish to increase the rate of productivity?
    c. How do you propose to do it?
    d. Should an increase in time be considered how would this be done?
14. Workshop equipment can be placed into three categories as shown on this card. What measures are taken to maintain each category in good working order?
15. This is a list of some of the consumables that can be used in the workshop. Please tell me those you have used for productive activities, those you have used for students' articles and those you have not used.

Cards handed out during teachers' interviews







LINKÖPING UNIVERSITY, SWEDEN

Department of Education and Psychology.

STUDENTS' QUESTIONNAIRE

I am a master degree student doing a research project concerning education with production. Part of the research involves obtaining information from students. This questionnaire consists of questions about your understanding of education with production, your experiences with it (if any) and what you think about it.

You do not have to write your name. The information you give will be used by the researcher only.

In this questionnaire productive activities mean those tasks you do or you would be doing in education with production.

Thank you for your co-operation.

Michael J. Mhlanga

1. Describe in your own words what education with production means.

_____

_____

_____

_____

_____

FOR QUESTIONS 2-5 INDICATE THE CHOSEN ANSWER WITH AN X.

2. To what extent do you think the following subjects are associated with education with production?

	very much	much	not sure	a little	not at all
a. Home economics					
b. Agriculture					
c. Woodwork					
d. English					
e. Mathematics					

3. Indicate to what extent you agree or disagree with the following statements.

	strongly agree	agree	not sure	disagree	strongly disagree
a. Productive activities benefit the school.					
b. Productive activities benefit the staff.					
c. Productive activities benefit the students.					
d. Productive activities benefit the people living around the school.					

4. Which of the following do you regard as productive activities?

	yes, it is	not sure	no, it is not
a. Sweeping the workshop.			
b. Repairing school furniture.			
c. Doing theory homework.			
d. Making furniture to sell.			
e. Revising for examinations.			
f. Making furniture for teachers.			
g. Repairing furniture for money.			
e. Making your own articles to take home.			

5. How do you rate the following methods used in the production of woodwork articles? ONLY RATE THOSE YOU HAVE USED.

The use of:	very easy to follow	easy to follow	not sure	difficult to follow	very difficult
a. jigs and other devices					
b. a working rod					
c. a template					
d. a working drawing					
e. a production line or mass production					
f. instructions and diagrams.					

BASIC CONSUMABLES

1. WOOD PRODUCTS

1.1 Solid wood;

- pine (clear)
- pine (ungraded)
- mukwa (white & brown)
- mukwa (all brown)
- others (specify).

1.2 Built up boards;

- blockboard (pine)
- blockboard (mukwa faced)
- blockboard (specify others)

- plywood (pine)
- plywood (mukwa faced)
- plywood (specify others)

- hardboard

- others (specify).

2. ACCESSORIES

2.1 Abrasives;

- glasspaper
- garnet paper
- others (specify).

2.2 Finishes;

- polyurethane (clear varnish)
- others (specify).

MAINTENANCE & SERVICING EQUIPMENT

	QUANTITY	ADEQUACY	STATE		
			GOOD	SATISFACTORY	POOR
A.					
1. Saw file					
2. Saw set					
3. Saw vice/clamps					
B.					
1. Oilstone					
2. Oilstone slip					
3. Oil can or substitute					
4. Oil					
C.					
1. Grinder					
2. Grease gun					
3. Grease					

No. of students ( )

Class size ( )

No. of workshops ( )

BASIC CONSUMABLES

	used for productive actv.	used for students' actv.	not used
1. WOOD PRODUCTS			
1.1 Solid wood;			
pine (clear)			
pine (ungraded)			
mukwa (white & brown)			
mukwa (all brown)			
others (specify).			
1.2 Built up boards;			
blockboard (pine)			
blockboard (mukwa faced)			
blockboard (specify others)			
plywood (pine)			
plywood (mukwa faced)			
plywood (specify others)			
hardboard			
others (specify).			
2. ACCESSORIES			
2.1 Abrasives;			
glasspaper			
garnet paper			
others (specify).			
2.2 Finishes;			
polyurethane (clear varnish)			
others (specify).			